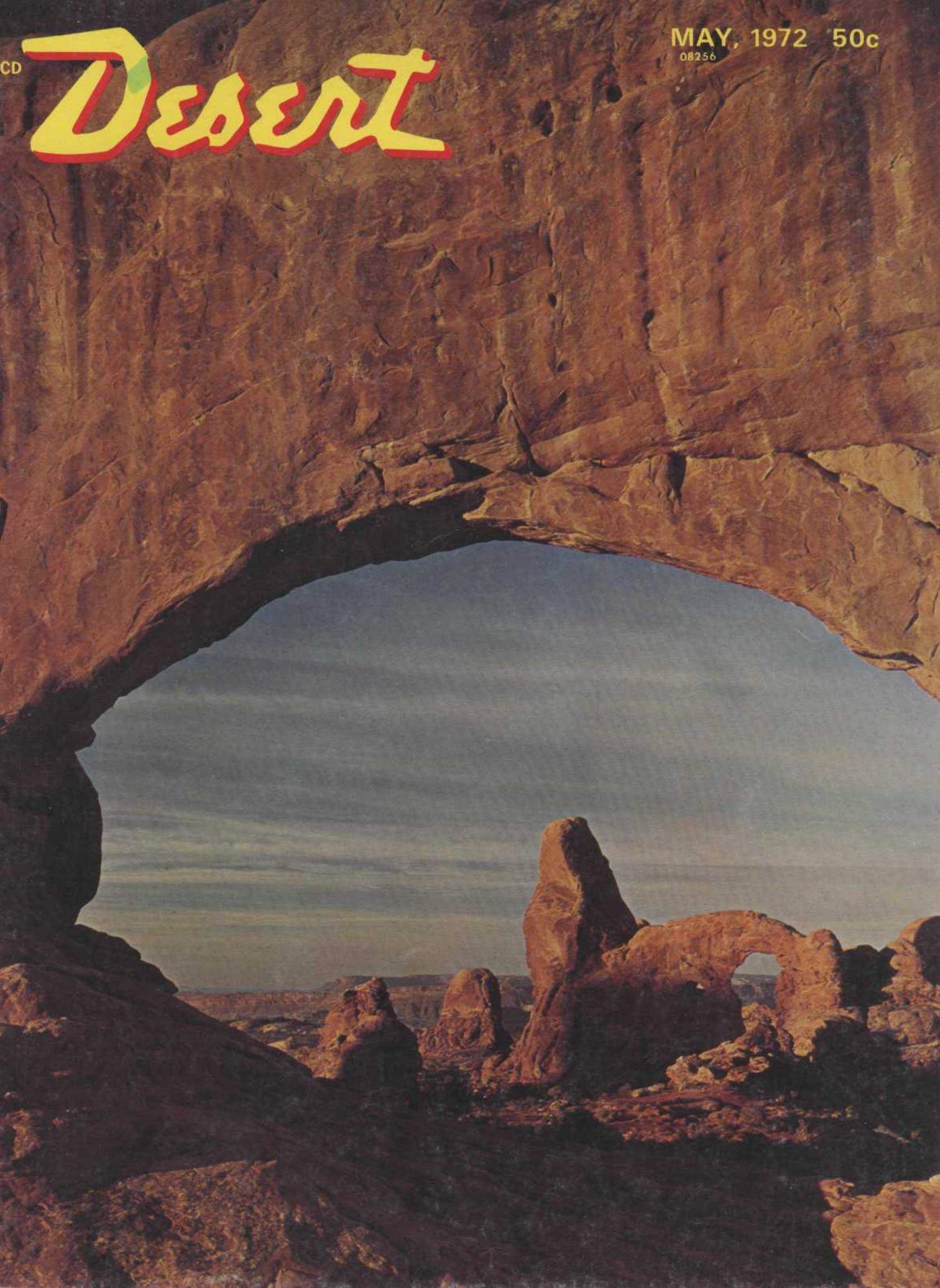


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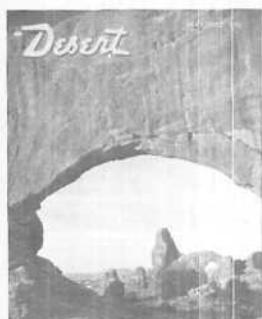
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MAY, 1972

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### THE COVER:

Turret Arch as seen through the North Window in Arches National Park near Moab, Utah was photographed by David Muench, of Santa Barbara, California. Most of southern Utah is comprised of national parks and monuments.

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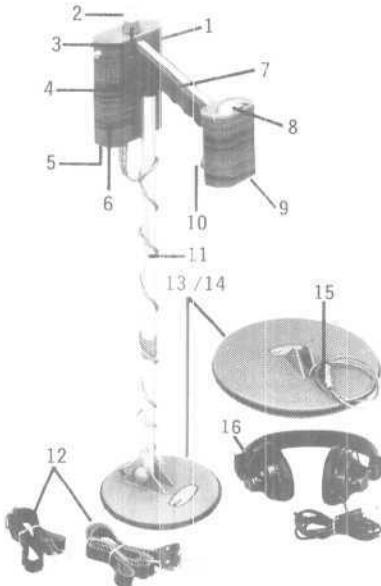
MARVEL BARRETT, *Circulation Manager*

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# A Peek in the Publisher's Poke

PUBLISHING THIS month's special issue on southern Utah and northern Arizona has been both a rewarding experience and a challenge. The rewards came in again renewing our friendship with the many wonderful people in the Beehive and Grand Canyon States and in making new friends as we gathered additional material for the issue.

The challenge was in deciding what articles we should use. There is so much to cover we could devote all 12 issues a year to these areas and still have material left over for another 12.

Since we cover all of the Western states, this would be impossible. However, other articles on Utah and Arizona will continue to appear during the coming months. Next month we will have another article by Enid Howard on the White Rim along the Colorado River and the conclusion of Stan Jones' "Paradise For Lunkers" which starts in this issue.

In previous years we covered Lake Powell from the scenic, boating and recreational angles. When we asked "Mr. Lake Powell" to write the fishing article it was to be the standard 2,000 words. You just can't cover Powell in such a short article. So, although, we seldom continue articles, in order to do justice to Stan and our readers the conclusion of his fishing guide will be in the June issue.

An outstanding writer and photographer, Stan knows every nook and cranny (and there are thousands) in Lake Powell. If you are going to Lake Powell don't fail to get his Boating and Exploring Map. In addition to 37 color photographs it tells you everything you need to know about the giant and scenic lake. His map is available through our Book Shop for \$1.25, postpaid.

This issue also features the Land of Standing Rocks, just recently made part of the Canyonlands National Park. Formerly a National Monument and now America's newest Park, Capitol Reef National Park is described along with a horseback riding trip through the Escalante area and short article on Moab, Utah's Slickrock Bike Trail plus a little advance publicity on a Memorial Day weekend boat cruise down the Colorado.

Editor Jack Pepper takes you on a safari through the Mormon country and on the Trail to Rainbow Bridge. And, of course, no issue would be complete without our field trip editor, Mary Frances Strong, who reveals a collecting area in California's El Paso Mountains. Our naturalist, K. L. Boynton, tells about the craziest of all birds, the roadrunner.

So as we do in all our issues, we have selected material that will be of interest to the entire family and to those who use all types of transportation to explore our wonderful world of color.



Stan Jones, "Mr. Lake Powell"

William K. Hodge

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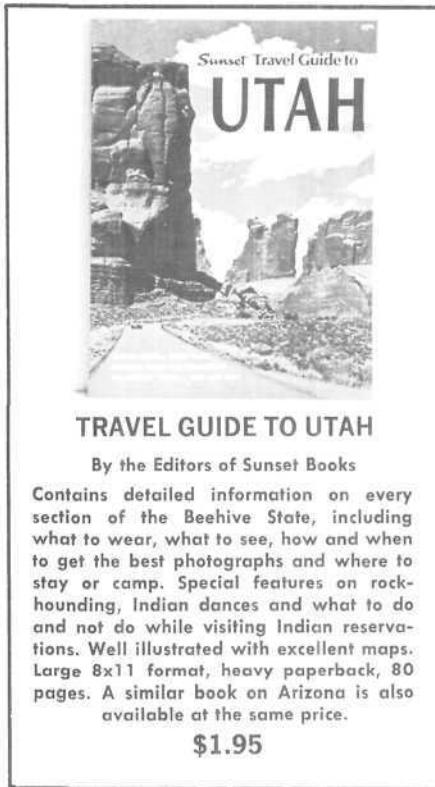
**GOLDEN MIRAGES** by Philip A. Bailey. Out-of-print for more than 20 years, this was a collector's item. A valuable book for lost mines and buried treasure buffs, it is beautifully written and gives first-hand interviews with old-timers long since passed away. Excellent for research and fascinating for arm-chair readers. Hardcover, illustrated, 353 pages, \$9.95.

**BURIED TREASURE & LOST MINES** by Frank Fish. One of the original treasure hunters provides data on 93 lost bonanzas, many of which he personally searched for. He died under mysterious circumstances in 1968 after leading an adventurous life. Illustrated with photos and maps. Paperback, 68 pages, \$2.00.

**DEAD MEN DO TELL TALES** by Lake Erie Schaefer. A sequel to *BURIED TREASURE & LOST MINES* by Frank Fish, the author knew Fish for many years and claims he was murdered. Her book adds other information on alleged lost bonanzas, plus reasons why she thinks Fish did not die a natural death as stated by the authorities. Paperback, illustrated, 80 pages, \$3.00.

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**THE WEEKEND GOLD MINER** by A. H. Ryan. An electronic physicist "bitten by the gold bug," the author has written a concise and informative book for amateur prospectors telling where and how gold is found and how it is separated and tested, all based on his own practical experience. Paperback, 40 pages, \$1.50.

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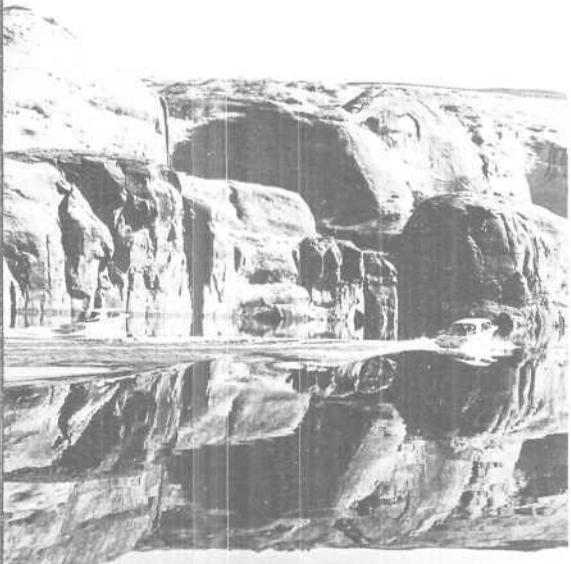
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**NAVAJO  
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*By  
Gilbert S.  
Maxwell*

As a result of a renewed interest and appreciation of the culture and artistry of Indians throughout the United States, there is an increasing demand for authentic handmade crafts, especially jewelry and rugs.

Although the reproduction of jewelry seems to be increasing, this is not true of rugs which Indian traders say are getting more and more difficult to obtain. As a result the prices are continually rising.

First published in 1963, this informative book is now in its 11th printing. Anyone planning a trip through Navajoland in southern Utah and northern Arizona should have a copy with them.

For, as this reviewer has found, once you see and feel a true Navajo rug, you will want to possess one, not only for its beauty, but, as my Indian trader friend recently said, "today, an investment in a Navajo rug is a better bet than buying diamonds." Slick paperback, illustrated with 4-color and black and white photographs, 72 pages, \$2.50.

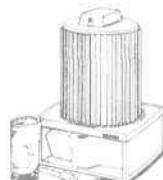


**TRADERS  
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*By Frances  
Gillmor and  
Louisa Wade  
Wetherill*

The story of John and Louisa Wetherill of Kayenta has long been considered a western classic and it is now in its third printing since first published in 1934. In addition to recounting the trading experiences and archeological finds of this fascinating couple from 1900 into the 30s, it gives an insight to Navajo customs, legends and ceremonies.

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ing post called Oljato, meaning "Moonlight Water" (later changed to Kayenta), John Wetherill also served the Indians as white father, doctor, lawyer, psychiatrist, historian and school teacher. As a guide to scientists and explorers and as an amateur archeologist, he discovered the ruins of Mesa Verde, Betatakin, Keet Seel and others. He was also the first of two white men to reach Rainbow Bridge.

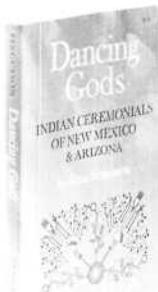
Mrs. Wetherill spoke fluent Navajo and this is her moving story of their experiences of living among and with the Indians for more than 30 years. Paperback, 265 pages, \$2.45.

now held most secret. As time went on, white missionaries showed a disposition to impose their beliefs on the Indians to the exclusion of their old faiths and they naturally grew more and more secretive until now they shut white men out of the most sacred parts of all their ceremonies and exclude them altogether from certain more important and probably more beautiful dances" the author explains.

However, she has been privileged to witness many of the closed dances and in her book she not only describes the ceremonies but also delves into the motivation behind the dances. "An Indian dance is not a dance in the sense in which we use the term. It is a ceremonial, a symbolic representation, a prayer."

The author also describes and locates the dances which are open to the public, including those of the Navajos, Zunis and Hopis. Paperback, illustrated, 280 pages, \$2.45.

DANCING  
GODS  
By  
Erna  
Ferguson



Many of the Indian dances and ceremonies held annually throughout the Southwest are open to the public, while others are either restricted or completely closed to viewing.

"From the chronicles of early Spanish explorers and from the reports of American Army officers and Indian agents it appears that white men were long welcomed to all dances, even the ceremonies

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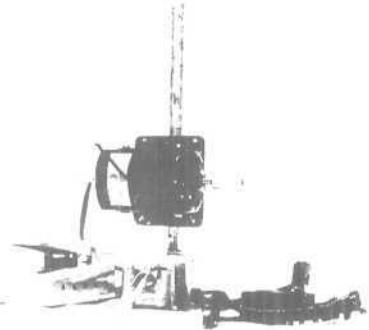
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SEND FOR NEW CATALOG #9





# MOAB'S SLICKROCK BIKE TRAIL

by Dee Collins

THOSE WHO own trail bikes are dedicated to the sport—those who do not own trail bikes cannot understand the "noisy contraptions." So where can the bike enthusiast ride his vehicle without censure from the public, in safety, and with enjoyment of his surroundings?

Moab, Utah, has come up with what they hope will be a solution to some of the problems facing the riders of the sport machines. Three years ago, the trail bike riders of Moab began a search for an area where they could ride and not antagonize the local populace. They looked over the country around the area and laid out their bike trail right in the middle, and on top of a vast empty area of "slickrock" of which there is a large supply around the Moab perimeter.

They asked a question, "Why couldn't their trail be a scenic and pleasure trip through beauty as well as a challenge to their skill as riders?" They have succeeded beyond their expectations.

The Bureau of Land Management administers the land they wanted to use and was enthusiastic about the idea. July 22, 1969 the new "Slickrock Bike Trail" was dedicated and has been in constant use since then. It encompasses some of the most outstandingly impressive country near Moab, the trail is well marked and skirts deep canyons, and has several scenic overlooks.

Echo Point has rightly earned its name—you can try it! Abyss View Point affords a breathtaking view from a sheer cliff into a box canyon. As the trail ap-

proaches the Colorado River area it overlooks the river and Utah Highway 128 from several different sites where the curving river mirrors the colorful cliffs.

There is a side trip of two miles off the main trail to Morning Glory Bridge. This picturesque natural bridge was formed by erosion of a narrow sandstone ridge, and arches over a small pool called Morning Glory Pool.

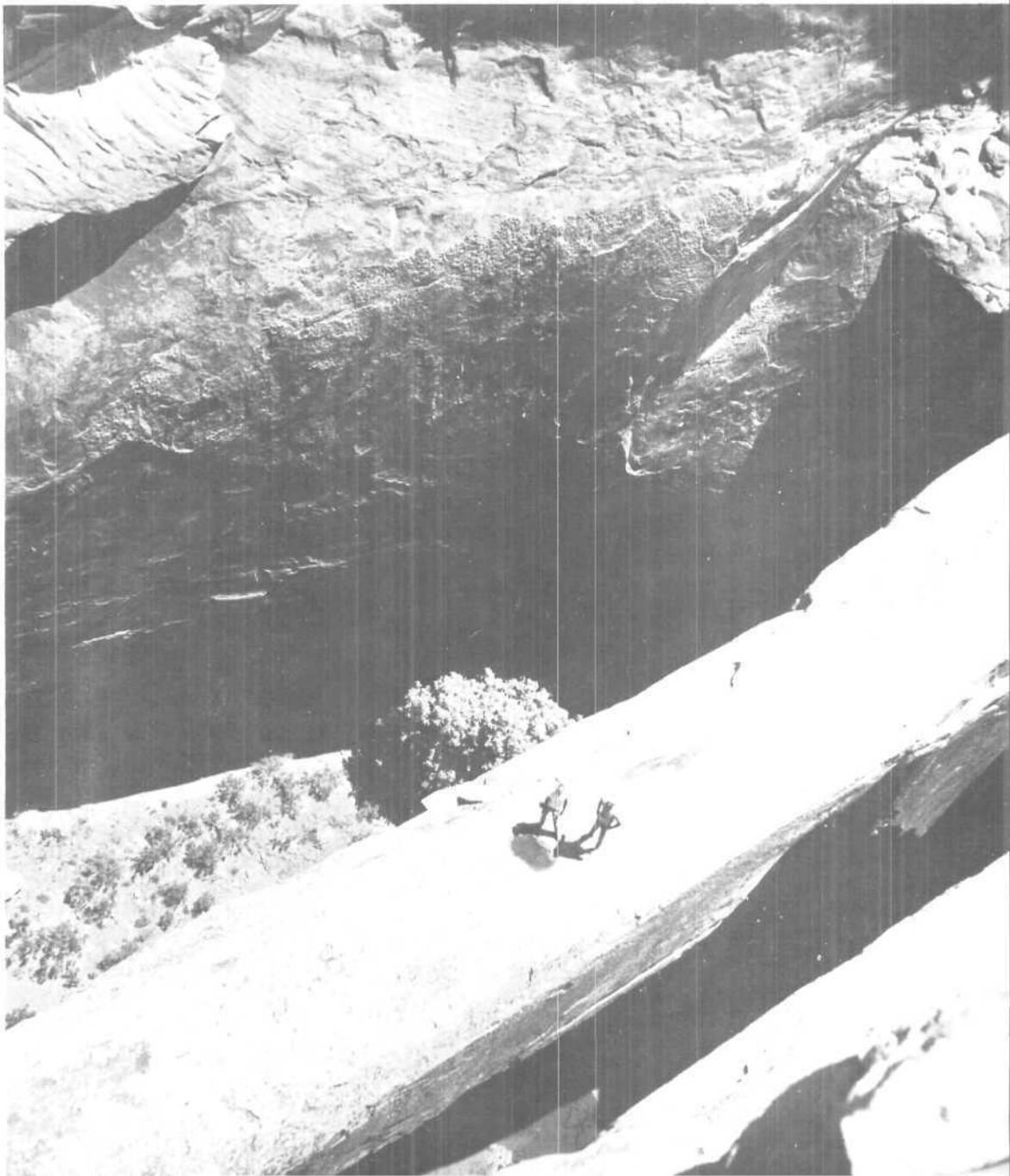
Then there is Shrimp Rock, named for a series of pools at its base that contain the tadpole, fairy and clam shrimp. When the pools are dry, the eggs become dormant until water again fills the ponds and the life cycle begins over again.

The trail is not all bare rock. There are sand gardens in the depressions of the

*continued*

*The Slickrock Bike Trail near Moab, Utah has been designed as a family recreational facility for the sole use of bike riders.*

*Approximately 3 miles long, it winds through scenic country and across (opposite page) the million-year-old compressed sand dunes. One of the many fantastic formations along the trail is the (right) Morning Glory Natural Bridge. Photos courtesy Bureau of Land Management.*





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rock that support sagebrush, juniper and pinyon trees, desert grasses, and even desert flowers here and there for a spot of color. There are small valleys filled with sand dunes where soapweed yucca, oak-brush, snakeweed and cedar trees seem to thrive. The cedars are obviously very old judging from the thick twisted trunks and limbs covered with deep layers of shaggy bark.

The high, often snow-capped, La Sal Mountains provide a distant background and striking contrast with the red and pink sandstone terrain of the trail as the riders skim along the surface of the ancient sand dunes that provide an ideal traction surface for the bikes.

Moab's Slickrock Bike Trail is not just a place to send the riders to get them out of the way of the citizens; it is a recreation facility designed by bike riders, for bike riders.

Marvin Jensen of the Bureau of Land Management staff in Moab, comments, "It has not solved all the problems of trail bike off-road travel and its resultant erosional effect on the land, but it has solved some of them." He feels it is a step in the right direction to provide areas that are at-

tractive to the devotees of this fast growing sport, that can be maintained like any other recreational installation.

The bike trail is designed only for trail machines equipped for rough country travel. *All other vehicles are not allowed.* For inexperienced riders there is a practice loop 2.3 miles long at the beginning of the course. The advanced portion provides an exciting trip—with rough spots where the bike may have to be "walked" in. The main loop trail is 10.3 miles long and takes about five hours to travel.

The Bureau of Land Management has suggested these precautions:

Use only low geared "trail bikes" equipped for rough country travel.

Only experienced "rough country" riders should attempt the advanced portion of the course.

Avoid riding double.

The trail is for sightseeing only—don't participate in contests.

Tell someone where you are going.

Carry drinking water.

Location of Bike Trail? If entering Moab on U.S. 163 from the south, turn right at the Greenwell Motel; if from the north, make a left turn and proceed to end of street. Turn right and follow to "Sand Flats Road—Slickrock Bike Trail," swing left and proceed past the cemetery. A dirt road will lead to beginning area of the Trail.

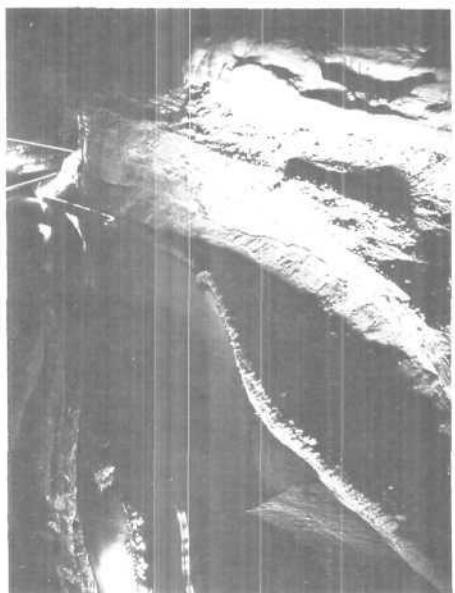
You may obtain a map of Moab's Slickrock Bike Trail at the Bureau of Land Management office at 68 South Main, (Hwy. 163) in the Canyonlands National Park Building. The staff of the B.L.M. is always ready to answer questions pertaining to the Bike Trail or surrounding areas.

If you are a bike enthusiast why not give Moab's Slickrock Bike Trail a whirl? This special place of sage, sand, sunshine and slickrock is for bike riders to use and enjoy. It is their own special world—but, keep it clean and keep it special. □

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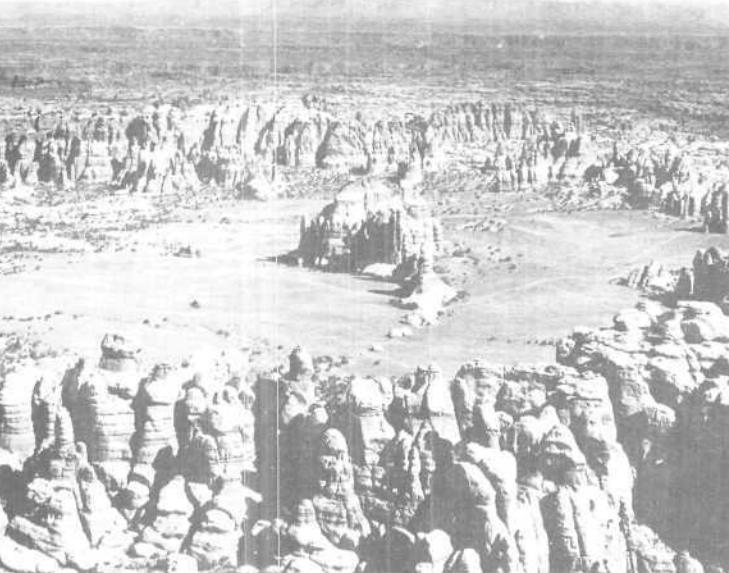
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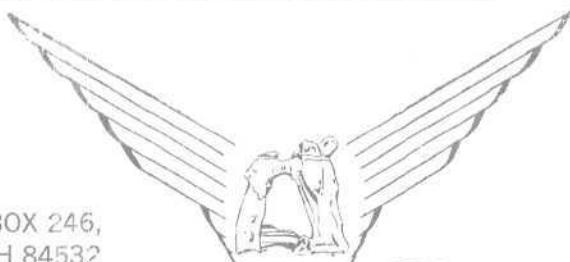
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*Called the Navajo and Ute Twins, this brilliant red sandstone formation is just outside of Bluff, Utah and is a favorite for bikers and photographers.*

# Bluff, Utah...

## WHERE TIME STANDS STILL

by Mary Foushee

**S**AND is very deep in the streets. People move slowly for there is no competition. Nobody new ever comes to Bluff."

That is how Ernie Pyle described our community in the 1930s while he was a "roving reporter" and before he became famous as a World War II correspondent.

Today the streets are graveled and even U.S. Highway 163 winds its way through our settlement, making a series of right angle turns before climbing out of exquisite Cow Canyon and onto the Bluff Bench. The highway then goes north through southern Utah to Blanding, Monticello and Moab.

And, once in a while, somebody new does come and starts a new business because he likes the country and the solitude and the lack of social pressures. And during the summer months quite a few tourists discover our town and ride the frisky San Juan River with Ken Ross, or wander in the red rock canyons with us—or just unwind in a spot where tranquility comes easily.

I think that travelers going through Bluff often muse over the possibility of getting away from the "rat race" and settling here. But the need to make a living, maintain two cars, a speed boat and their teen-age childrens' orthodontist prevails—and what Bluff offers is not living in the style to which most Americans are accustomed.

What Bluff does offer is a spectacular



*During the third Saturday of each June, Bluff holds its annual Indian Day Celebration with Navajo and Ute Indians competing in a variety of contests, including horse races and rodeos.*

setting—a shady river valley nestled between bluffs (after which the town was named) that blaze with breath-taking glory in the long, low rays of the sun. Its sturdy sandstone houses, built around the turn of the century by Mormon pioneers, speak of values that once belonged to all of us. Cemetery Hill, located in the classic western manner on a bleak gravel hill above our town, offers to history and nostalgia buffs a glimpse of the past.

Cemetery Hill is actually the remnant of a gravel terrace dating back over 10,000 years. The terrace remnant bears testimony to the relentless passage of time. Some of the conglomerate cobbles (over two million years old) are themselves composed of gravels that were being rounded, polished, deposited and cemented into a "new" formation, which in turn broke down and has migrated down the ancient San Juan River to the old terrace level. And now, and for the last thousand years, the terrace is being cut away by the elements.

In the village the graceful lines of the Kumen Jones house, one of the town's loveliest but now falling into ruin, attracts artists, photographers and lovers of old houses who pause in its shady yard to sketch, film or just dream.

Up the valley a paved road leads to St. Christopher's Episcopal Mission for the Navajo Indians, which is set in a spectacular location against the red cliffs. Another mile of graveled road ends at the river and a suspended foot bridge which crosses the



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San Juan River to the Navajo Reservation.

Visible 40 miles farther east in Colorado is the "Sleeping Ute" Mountain. It is an intrusive laccolith mountain where the molten rock from depth has squeezed upward and in between layers of sedimentary rock, producing a lens shape. The laccolith mountains of the Four Corners Country have long been famous for their sharp contrast against the brilliant Utah skies.

A few miles north of the Navajo foot bridge, Recapture Pocket's weirdly eroded formations are outlined against the sky.

Recapture Canyon was named by a surveying party in 1875. Coming toward the Bluff area from the east, their horses were driven off by marauding Indians, only to be recaptured later in a drainage system now called Recapture.

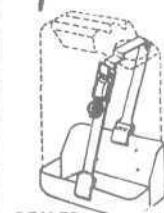
In the canyons near Bluff, prehistoric Anasazi people lived and built spectacular cliff dwellings, hunted, drew their petroglyphs on the rocks and made pottery — and then, after a few hundred years, left the area.

In present day Bluff, the third Saturday of each June brings Bluff's Indian Day celebration (Bluff is still a trading center for Navajo and Ute Indians), a non-tourist-oriented event that provides fun and color. Navajo fry bread contests, bow and arrow competitions, traditional Navajo games, chicken pulls (without chickens), and horse races bring fun to contestants and spectators. Navajos and whites cooperate to bring the one day of organized festivity to Bluff's otherwise unscheduled calendar. Later in the summer an all-Navajo rodeo takes place.

West of the village, a public campground borders the San Juan River and from this location a new bridge crosses the river, opening up a hitherto inaccessible portion of the Navajo Reservation.

Bluff today doesn't offer an existence free from problems, any more than it did to Hole-in-the-Rock pioneers that spring nearly 100 years ago. But today's travelers are looking for different things than they were in 1880 — and to those seeking a few days free from the city's complexities in surroundings of serene beauty Bluff is the answer. □

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# ON THE TRAIL TO RAINBOW BRIDGE

DURING MY early teens I had two idols. I was an avid reader of the adventures of Zane Grey and I was sorry I was not around to help Teddy Roosevelt storm San Juan Hill. I made a secret vow to follow in their footsteps.

And sure enough, here I was following in their footsteps—or maybe I should say horsesteps—as I gaily sang "Along the Navajo Trail" while jauntily riding my faithful Indian steed along the trail to Rainbow Bridge.

Zane and Teddy (I felt that now I was a mature man and shared something in common I could call them by their first names) had blazed the trail many years before and under much more severe circumstances. Zane Grey first saw the bridge in 1925 and Teddy Roosevelt in 1913.

The two things we had in common were that we all loved to sing and our voices had also echoed through the canyon walls as we rode through the scenic wonderlands of southern Utah.

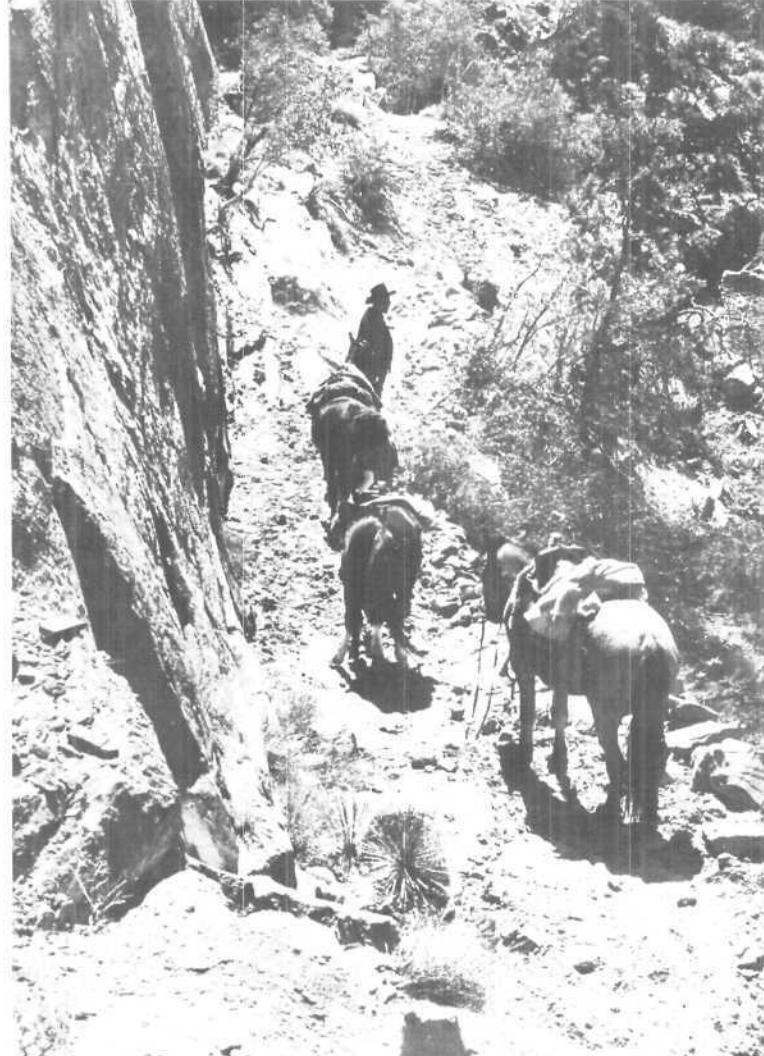
It didn't bother me that Zane's books are still being read throughout the world and that Teddy later obtained a rent-free white house in Washington D.C., and that they both had melodic voices whereas I can't carry even one musical note.

However, my faithful Navajo pony seemed to enjoy my voice as he didn't even

by  
Jack  
Pepper

*Trail to Rainbow Bridge winds through spectacular Rainbow Canyon (opposite page). The 14-mile trail also crosses mesas (above) and down some slopes which are so steep riders dismount and lead the horses.*

*All photos by the author.*



buck when I hit the high notes as we rode together along the 15-mile trail which winds through canyons, over mesas and down through the clear, cool streams of this colorful country.

The reality of the trip was due to Bill Crawley, owner and operator of Crawley's Golden Sands Tours in Kayenta, Arizona. The majority of Bill's many tours, conducted by his English-speaking Navajo Indian guides, are in four-wheel-drive, air-conditioned vehicles into Monument Valley and other areas on and around the Navajo Indian Reservation.

Rainbow Bridge is within the Navajo Reservation and the Navajo Indian Tribal Council has awarded a new and exclusive concession to Crawley to conduct guided horseback riding tours in the area. This overland route can only be traversed by horseback or hiking.

The largest and most impressive of all natural bridges in the world, Rainbow Bridge is three hundred and nine feet high and has a span of two hundred and eighty-nine feet. At its summit the arch is forty-two feet thick.

I was first awed and inspired by this sandstone edifice eight years ago when ex-

*Largest natural stone arch in the world, Rainbow Bridge is 309 feet high and 278 feet wide.*

ploring the Colorado River with Gaylord Staveley, veteran river guide. At that time the waters of the river were being backed up by the then newly created Glen Canyon Dam which was forming Lake Powell.

We had to hike eight miles from the river to the natural arch. Today, as a result of the filling of Lake Powell, the walk to the bridge is only one mile from the public boat docking facilities of the Glen Canyon National Recreational Area.

You can visit Rainbow Bridge via the water route either in your own boat or by taking the guided tours offered by Canyon Tours, Inc., from Wahweap Marina near Page, Arizona, Hall's Crossing Marina on the Arizona side of the lake or Bullfrog Marina, on the Utah side, both of which are north of Rainbow Bridge.

Having covered Utah for many years by passenger car, four-wheel-drive vehicle, boat and airplane, I thought I had a comprehensive and overall view of this "scenic wonderland." But it was not until I followed the Navajo Trail to Rainbow Bridge I learned to appreciate the vast silence and grandeur of this massive land.

The only noise was the steady and soothing crunch of my Navajo pony's hoofs or his neighing as he occasionally signalled his intention to stop and chew on the sage brush along the way. Even the click of my camera seemed to disrupt the gentle whistling of the wind which isolated us from the hot rays of the noonday sun.

You don't lead a Navajo pony. You let the reins hang loose with complete confidence, for this gentle animal knows his way and will not fall or stumble as he slowly picks his way along the trail.

Sometimes I would ride for miles in silence as I tried to absorb the beauty of this country, yet subconsciously knowing it just could not be absorbed, recorded or photographed. The elusive and ever-changing colors of the land, the unrecorded prehistoric past and the fleeting present



just would not fuse into my mind which was attuned to the pragmatic world of today.

At other times, when we were on top of level mesas, I would switch from contemplation to exhilaration and use my rawhide whip to convey my excitement to my pony.

He would immediately break into a gallop as we became part of each other and



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*Giant sandstone formations from which you can see for miles are characteristic of this part of southern Utah.*



the rocky and treacherous trail to the canyon below.

We would walk into the clear stream and drink the cool water. Then he would shake himself from head to rear, neigh as though saying, "let's get along the trail" and I would climb into the saddle and we would head for new adventures.

We made the ride from the corral at the base of Navajo Mountain in a little less than eight hours with the return trip the next day approximately the same time. Since I was on a time schedule we took only two days. However, depending upon the number of people in the group and their desires, the round trip is usually a three or four day adventure.

In addition to Bill Crawley, our small group included Bill's 19-year-old niece, Joanie Crawley and Tinker Yazzie, a veteran and experienced Navajo guide. After riding all day, Bill's camp under a giant cliff was a welcome sight. I had expected to crawl into a sleeping bag. Instead there were regular beds with mattresses and a huge grill where Tinker cooked steaks and potatoes and onions.

As we sat around the campfire with the moonlight silhouetting Rainbow Bridge in the distance, Crawley told us the first white men to see the giant arch were John Wetherill and Dr. Byron Cummings who were led into the then virtually unexplored country in 1909 by Nasja Bega, a Piute Indian.

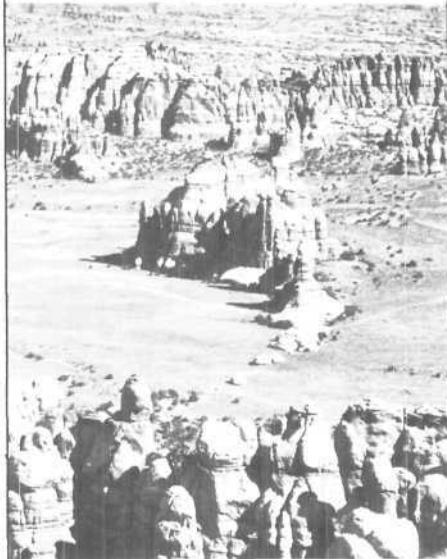
Tinker said the Navajos call it *Nonnezoshe*, meaning "the great stone arch" and it is called *Baroboini* or "the rainbow" by the Piute Indians.

We were up at dawn the following day and after spending time to photograph and again admire Rainbow Bridge we headed for home. We retraced our route through colorful Bridge Canyon, past Owl Arch, through Oak and Nasja Creeks and into Bald Rock Canyon where we paused for lunch. The trail continues through Cha Canyon, over another mesa into Trail Canyon and Desha Creek and eventually to the base of Navajo Mountain. From there it is a 40-mile drive back to Kayenta.

As I looked back at Navajo Mountain, which is one of the Navajo's sacred grounds, I relived our adventures of the last two days. We had seen so much and yet there was a great deal we had missed and I knew that someday I would return and once again take the Navajo Trail to Rainbow Bridge. □



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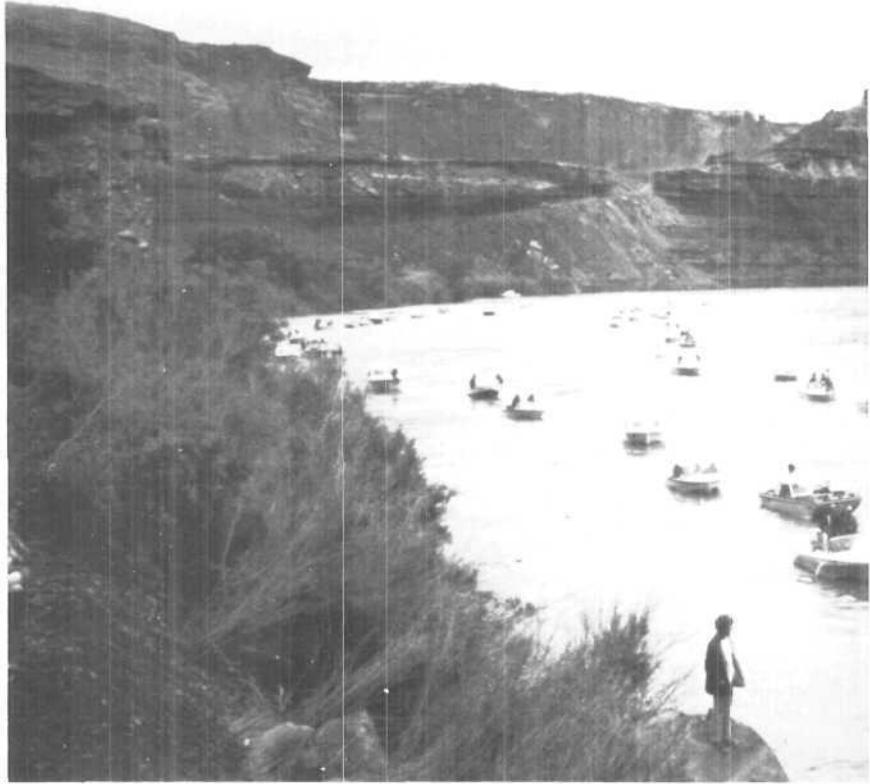
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by  
Des  
Barker



# UTAH'S FRIENDSHIP



APPROXIMATELY 700 power boats from throughout the West are expected to be in the 11th annual running of the Friendship Cruise down the Green and up the Colorado Rivers in southern Utah over the Memorial Day weekend.

The river trip for pleasure boaters begins at the Green River State Park at Green River, Utah on Saturday, May 27 where boats will be registered until noon.

The fee is \$25.00 and includes launching and docking, gas services at strategic points, rescue services over the 196-mile run, ferrying your car and trailer from Green River to Moab, a feast at Moab at the end of the run and entertainment at Anderson Bottom on Saturday night.

Much of the trip runs through the Canyonlands National Park past Indian ruins, magnificent scenery and challenging river currents. On Saturday night the Moab Jaycees prepare a steak fry at Anderson Bottom for \$3.50 per plate. Anderson Bottom lies within the park providing a magnificent setting for camping and relaxing after the first day's journey.

There are 44 special sites along the way ranging from Moki Houses built in the cliffs to the haunts of early outlaws. Trav-



Coffee Pot Rock, Dead Horse Point and finally, Moab and the waiting feast.

The run is held each year in cooperation with the National Park Service, the Bureau of Land Management and several volunteer organizations. Over 300 volunteers work on various facets of this unique annual junket covering nearly 200 miles of the most fascinating river country in North America.

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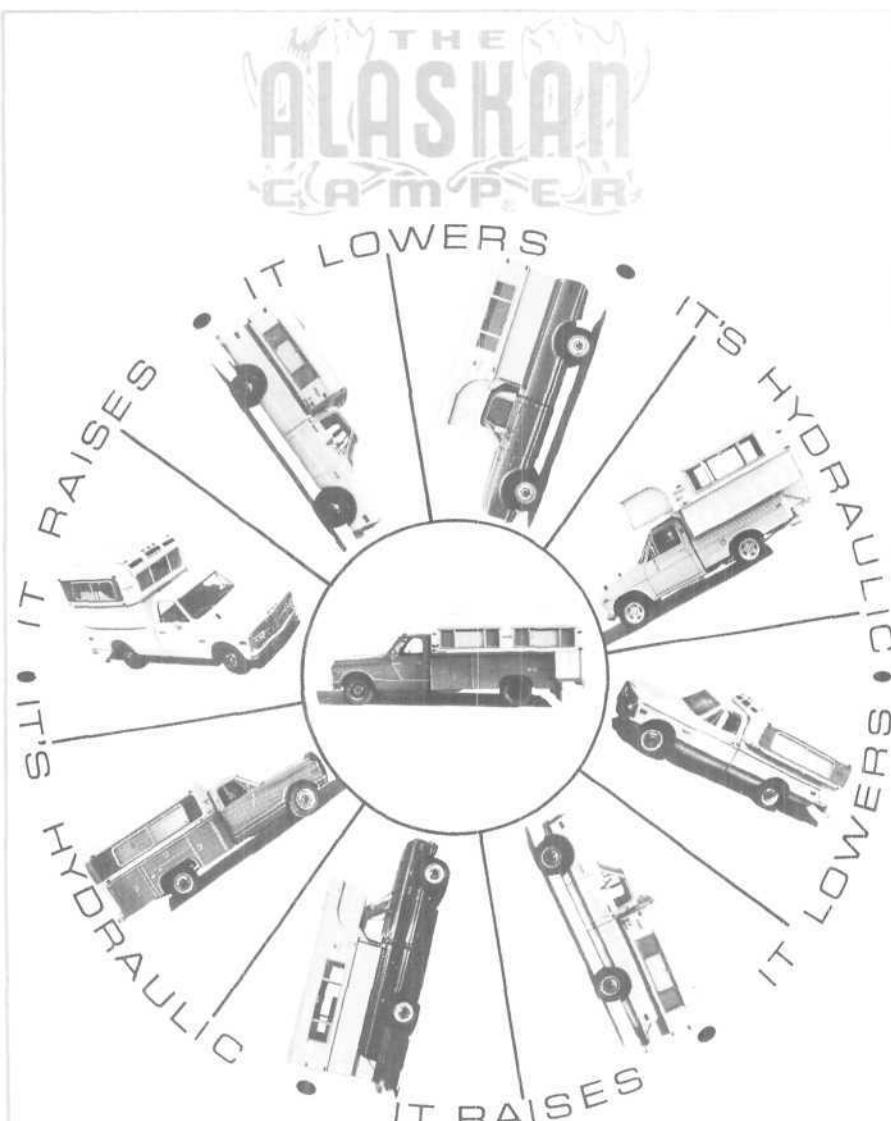
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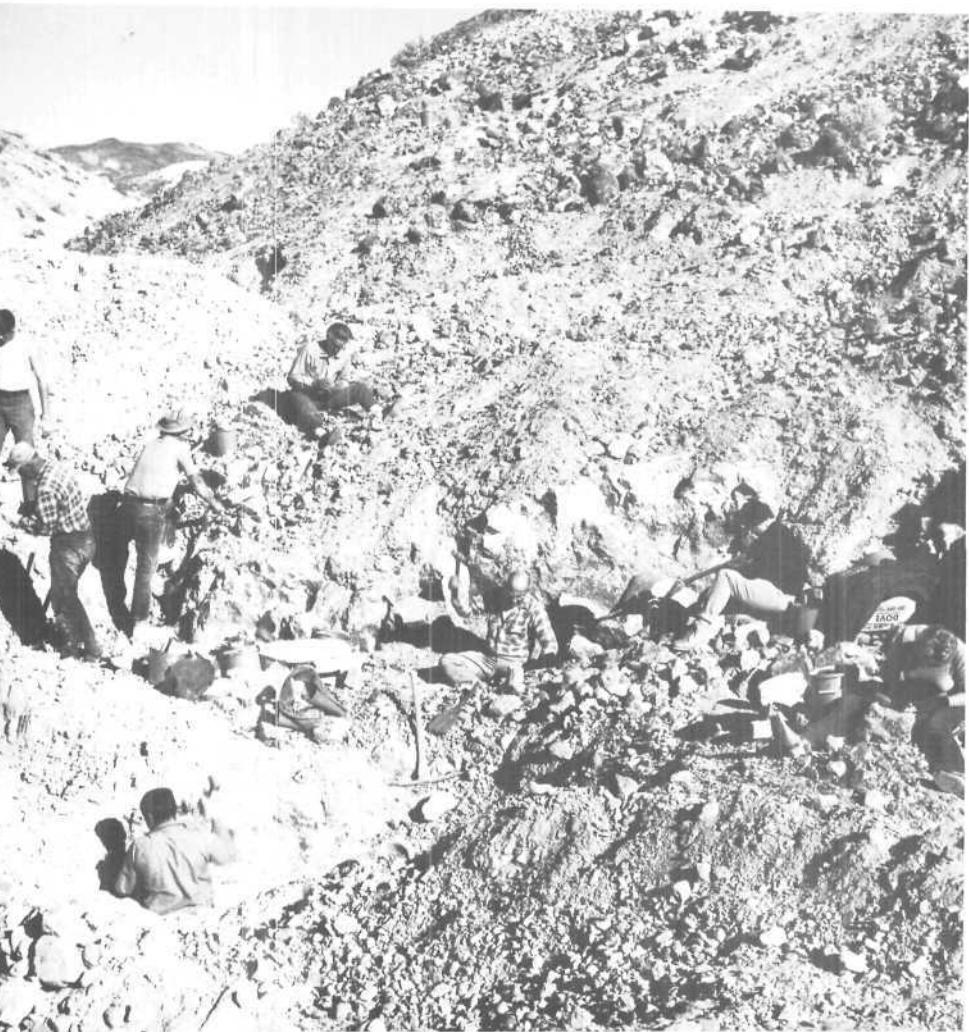
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## A California Field Trip

# Fire Opals In El Paso Mountains

by Mary Frances Strong



IT WAS a warm, sunny, mid-winter day on the Mojave Desert. The stillness of the canyon was broken by the sounds of metal against rock and the muted tones of people. Suddenly a woman's voice happily cried, "Look what I found!" In the palm of her hand, sparkling in the sun like an iridescent rainbow, lay a half-inch stone. She had found the coveted prize—a fire opal.

This scene is not uncommon at Leo Nowak's Opal Mine in the El Paso Mountains of California's Kern County. As might be expected, numerous rockhounds visit the mine where, for \$1.00 per person, they can spend a full weekend digging gemstones.

During the six years Leo has been operating the claims, he has tried to make things "easier" for the diggers. A modest level camping area has been cut from the rather narrow canyon. A chic-sale is provided but there are no other facilities.

Leo uses a skip-loader for digging into the opal-bearing basalt to expose new material for collectors to work. The opals occur as amygdules in the dark basalt and are "extracted" by cracking the host rock. He also regularly moves the gangue material out of the way.

"I want to be sure the rockhounds obtain some opal and are happy with their material," Leo told me. Evidently he is successful in this, as many people return each weekend to try their luck.

The opal deposit was known for many years as the Cowden Opal Mine. It was in 1946 that the Cowdens staked their claim. They had hoped to develop a gem mine and sell the fire opals commercially. A 125-foot shaft was sunk into Member 5 of the Ricardo Formation which was exposed at the head of a canyon. One of the basalt flows was also prospected by small open cuts. The difficulty encountered in removing the opals from the matrix made commercial mining unfeasible and the deposit was opened to rockhounds.

Topped by Flow F (an olivene basalt up to 100 feet in thickness) Member 5 of the Ricardo consists of lake bed deposits containing opal-chert, sand and

Culver City Rock and Mineral Club members (opposite page) dig into opal-bearing basalt.

There are ample camping areas (above) for rockhounds who move in (below) after a skip loader cuts a trench.



Photos by  
Jerry Strong

silt, sandstone, tuff-breccia and three additional basalt flows. Its total thickness averages 750 feet and is well exposed along a two-mile canyon running east from the opal mine to Last Chance Canyon.

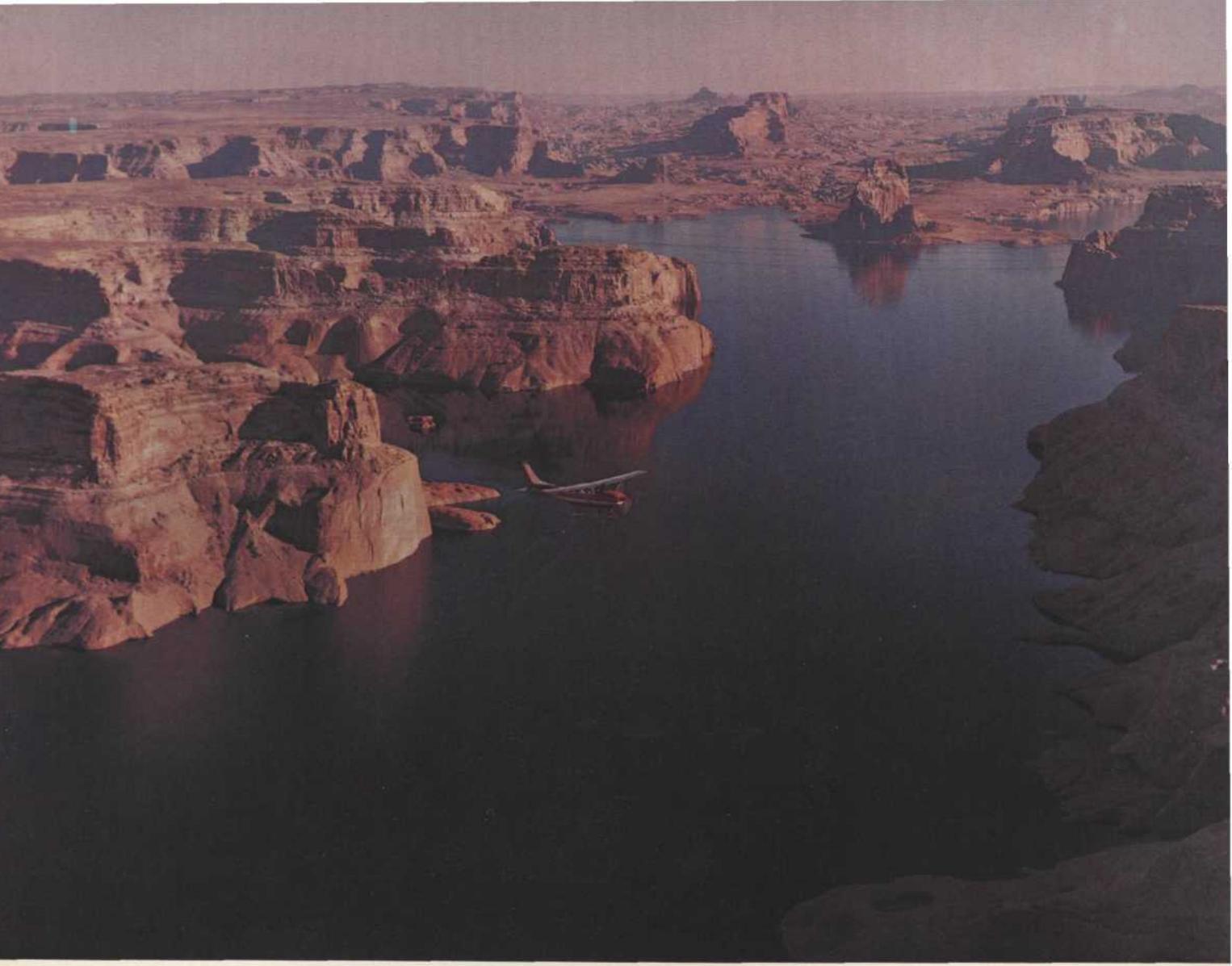
The Ricardo Formation in the El Paso Mountains has been studied extensively. It is the largest, complete series of Pliocene sediments and volcanics exposed within the Mojave Desert and probably was deposited as a local subsiding basin.

The formation is also well known for the fine specimens of petrified wood to be found in the opal-chert sediments. Some specimens have been identified as palm and various hardwoods which seems to indicate this region was hot and semi-arid even in the Pliocene Epoch over a million years ago.

It has also yielded a number of mammalian fossils including horses and camels. Dr. J. C. Merriam describes the fossils in his report, *Relationship of Pliocene Mammalian Faunas from the Pacific Coast and Great Basin Provinces of North America*. (University of California Geological Bulletin, Vol. 10, 1917.)



Continued on Page 50



# PARADISE FOR LUNKERS

Lake Powell is one of the wonderlands of the West. Formed eight years ago by waters of the Colorado River backed up by the Glen Canyon Dam on the Utah-Arizona border, the serpentine waters have inundated the hundreds of estuaries where half-submerged trees and logs make Lake Powell a fisherman's paradise. Stan Jones, whose fishing knowledge has resulted in his title of "Mr. Lake Powell," tells you how to fish for these giant lunkers.

by Stan Jones

*Photos by the author*

**H**UGE, SPECTACULAR Lake Powell is now seven years old. And, for the angler, it has come of age. Its deep, clear waters teem with eight varieties of fat and healthy fish. Each season finds each of the species larger in size and numbers. In Powell, living things grow at a fantastic rate.

I've had the good fortune to explore and fish this unique body of water since its beginning. Today, more than ever before, Lake Powell offers an unparalleled combination of excellent fishing and superb scenery. What I enjoy about fishing Powell is its "open season" (day and night every day in the year) and the fact that I can fish for largemouth bass, rainbow and brown trout, crappie, bluegill and green sunfish, walleye pike or catfish—all in the one lake. What more could an angler ask?

My home in Page, Arizona stands almost on the shore of Lake Powell. I can roll my boat into the blue waters of Wahweap Bay whenever I wish. The waterway is so vast and so replete with canyons, coves and bays that I virtually disappear in a matter of minutes, returning to a favored glen or discovering a new hideaway where I might fish for hours without sighting another craft.

But these pleasures are not reserved for those of us who live in Lake Powell Country. You can share the joys of this grand, new lake, too. One word of caution: marine biologists describe Lake Powell as "exotic", meaning that its geological and ecological structure differs in many ways from that of most other lakes where any of those same eight varieties of fish may also be found. Thus, at Powell, the angler may find that fish with familiar names may not respond in familiar ways because they inhabit "unfamiliar" environment.

The longer I cling to the Isaac Walton cult the more I realize that no man is a genuine, unbiased, dependable, completely knowledgeable authority on fishing. But my love of the sport and my years in pursuit of Lake Powell's denizens have given me some small insight into the nature of Powell's "exotic" underwater terrain and the often unusual habits of its remarkable fish population. So I offer this introduction to the lake's species in the hope that it might assist DESERT readers to enjoy Powell's fishing as much as I do.

*When fishing Lake Powell, be sure and have a strong net for the large mouth bass and for these beauties (right) which will make a full-size meal. On the other hand, you can be lazy and catch the less game fish which will take your hook as you sleep in your boat.*



### WALLEYE PIKE

If Lake Powell, like Scotland's Loch Ness, harbors a seldom-seen but much-talked-about creature of the deep it must be the walleye pike. Each year nets of marine biologist census-takers reveal increased numbers of walleyes. But only a few anglers have brought in the pike by rod and reel.

The largest concentration of walleyes is in Padre Bay, but nets reveal them in other areas, too. Their insatiable appetite for the big lake's thriving threadfin shad population ensures that the species will continue to follow shad schools into all of Powell's waterways.

Considered a native, rather than a planted fish, walleye are thought to have "escaped" into Lake Powell from a tiny, older lake on Utah's Green River far to the north. Powell's clean, deep water has provided an ideal climate for a pike population explosion. The species is certain to become more and more important to the lake's sportfishing.

Named because of its white, blank-star corneas, the walleye is actually a variety of perch, not a true pike. It lives in deep water, feeds late in the day, and pound for pound can give any other Lake Powell denizen plenty of competition in



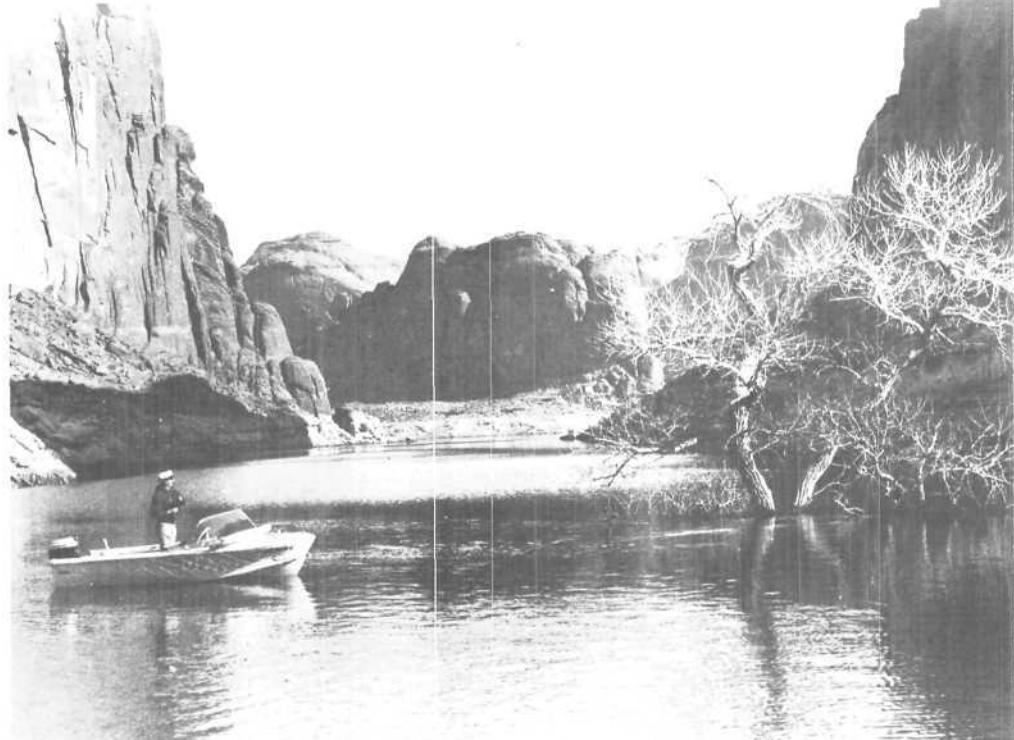
the fightin'est fish race. The walleye's potential life span is about seven years and an individual can grow to great length. Slim and sleek, with a snout that makes Jimmie Durante's look like a wart, the Lake Powell walleye responds best to trolled artificial lures resembling minnows.

In the middle of Powell's Padre Bay

stands a natural unnamed gravel island that has a special appeal for the lake's walleyes. Waters surrounding the isle are especially deep and cold. Schools of shimmering shad periodically meander around so that the larger fish have only to lie in wait for an evening meal. From those depths the census-takers have netted walleyes as large as nine pounds. Anglers who troll around the island have not fared so well. Powell's record rod and reel catch weighed five pounds, three ounces.

My favorite lures for walleyes are small silver spoons (to which a short length of pork rind can be added); a three-inch black and silver Rapala, or one of several of Poe's Loco-motion plastic plugs. But none of these trolled lures seems to cause Mr. Walleye to blow his mind. Only if the spirit moves him will he stir his long torso and dart after the bait, clamping down on it with those big, ugly jaws, then turning to head for the deep.

From that moment there is little question about the walleye's ability to make war. And it will be a war fought on his own ground—in the cold, dark waters of the bay where he will use every trick short of surfacing to convince the angler that all walleyes should be allowed to remain



*The small canyons of Lake Powell test the angler's skill as he uses either waterdogs or plugs for the elusive trout and bass. Fishermen can also admire the brilliant red sandstone cliffs—provided they take time from catching the lunkers.*

right where they are found.

Few people want to work as long and as hard as is necessary to bag a significant number of walleyes. But I anticipate the day when a good percentage of Lake Pow-

ell anglers will seek out special challenges; a day when a man's piscatorial prowess will be measured by the number and sizes of walleyes he can wrest from the depths. The walleye bag limit is six fish. I know of no one who has brought in such a catch.

#### **BLACK CRAPPIE**

The angler who is out strictly for fun (and some especially good eating) can have a ball at Lake Powell by going after black crappie. First planted in 1965, that species found Powell's waters ideal for breeding and for a high rate of offspring survival. As a result, small plate-shaped crappie are everywhere in vast numbers and many individuals have grown big and fat.

Although crappie traditionally seek roiled waters in warm shallows such is not the case at Lake Powell. Catches can be most easily obtained in clean water at the base of sheer cliffs; in clean waters sur-

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rounding gravel shoals and islands, and in the clean shallows of slim canyons. I continually snag crappie while trolling for bass in such places, especially during summer months. No matter how large a lure I troll the crappie seem anxious to dart after it. Many of my "unwanted" crappies were smaller in size than the plug that hooked them!

Also known as "calico bass" the black crappie is not quite the scrapper that is its beautiful mid-western cousin, the "strawberry bass." But its meat is equally as delicious. The average individual will weigh in at about three-fourths of a pound, but some of the older crappies have survived for four or five years and have grown to pie-tin proportions. Marine biologist Steve Gloss of the Utah Division of Wildlife Resources tells of one Powell crappie that weighed two pounds, four ounces!

There is no bag limit on black crappie; methods of hooking them seem limitless, too. Crappie fishing remains a favorite of kids who like to still-fish with worms or bugs. A youngster can throw such bait into Powell's water at almost any point along its 1,800-mile-long shoreline and chances are he'll end up with a stringer of

the little panfish. Unless the juvenile angler is fourteen years old he needs no license at Lake Powell.

If you insist on instant fishing success try for this spirited little denizen. And if you like your catch fried over a campfire there is no fish more pleasing to the outdoor palate than the sweet-meat black crappie.

#### BLUEGILLS AND GREEN SUNFISH

Bluegills and green sunfish are native to the canyons of the Colorado River and they have thrived since being trapped in huge Lake Powell. They will respond to anglers in much the same manner as black crappie. But the angler looking for a special thrill may want to pursue these lively fish with a fly rod.

To stand in an open boat and whip a tapered line out across the placid lake surface can be a demanding, but rewarding experience. Some fair-size bluegills and sunfish can be expected to rise to your choice of a fly. Half-pounds are common; the census-takers report that some individuals grow to weigh a pound!

The bluegills, sunfish and crappie—all true sunfish — share a bright, shallow realm, preferring sunshine, sandy bottoms

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and, where possible, moving water. In spring they may inhabit the upper ends of Powell's 91 major canyons where runoff can cause clear riffles, sparkling falls and sometimes muddy torrents to pour into the lake. They feed on shad, not on verdure at the bottom, so near-the-surface fishing is the rule.

There are no possession limits on bluegills or green sunfish. Considering the fact that they have been trapped in the big lake for only seven years, and that the all-time American bluegill record is four pounds, twelve ounces, Powell's bluegills are coming along well. Perhaps some avid fly enthusiast will net one the size of a frying pan during the season.

### CHANNEL CATFISH

There is one denizen in Powell's waters that may not appreciate the normally clean nature of Powell's "exotic" underwater realm. It is the channel catfish, the only species that remains quite typical of his kind everywhere. Native to Glen Canyon long before men dammed the Colorado River, big old cats continue to haunt the few muddy bottoms to be found in Lake Powell Country. Although doughballs, guts and other "untouchable" baits are as

effective at Powell as elsewhere, a surprising number of catfish are caught on waterdogs!

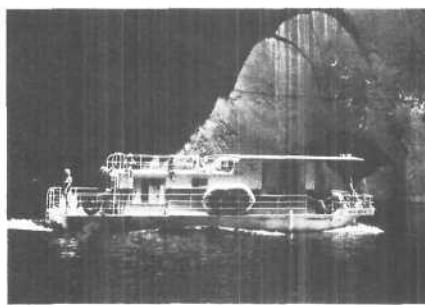
Best catfishing is at the heads of wide bays such as Wahweap, Warm Creek or Bullfrog where new rises in the lake's level can create instant verdure-choked mud-holes in which cats love to wallow. Because it is not stalked like other species, the catfish is not considered by many anglers to be a true sporting fish. But, in the West, there are a growing number of small-boaters who like to sit in the sun in less scenic areas and try for strings of the delicious, homely critters. The bag limit is 24 fish.

### BROWN TROUT

Among the eight species of game fish in Lake Powell none has caused more recent comment than the German brown trout. Not because of its numbers—there are relatively few in the lake—but because of several giant specimens landed by surprised anglers who were actually seeking rainbow trout. As *Desert Magazine* went to press Powell's brown trout record stood at a remarkable seventeen pounds, two ounces. But in the past such records have not survived for long.

The sleek, red-spotted brown trout in Lake Powell are said to be runaways from Navajo Lake on the San Juan River in New Mexico. Winding their way down the long canyons to Powell they set up housekeeping as though they really belonged. And so they do, for the important "exotic" conditions at Powell have contributed to a significant survival and fantastic growth rate for the browns.

Two conditions typical of Lake Powell are in large part responsible for the



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brown's healthy existence and abnormal growth. First, the lake's water is especially clean and marine biologists say, "the cleaner the water the faster browns grow." Second, Powell does not freeze over during winter. This is very important to the brown because the species is a great user of oxygen. In bodies of water that are frozen over for long periods (especially if covered by snow that shields inundated oxygen-producing plants from the sun's rays) the brown trout can actually breathe himself to extinction.

Where are Powell's biggest browns and how to fish for them? No one really knows. But the brown's habitat and habit patterns are historically those of his close cousin, the rainbow trout. My advice is to go rainbow trout fishing and, although the odds are long, maybe Mr. Brown will take a liking to your lure.

So if you want to go fishing and get away from the problem of having another angler ramming your boat or snarling your line . . . if you want to work hard for the big ones or just lazily relax in the sun and let the others take your hook . . . and if you want both spectacular scenery, clear blue waters and a combination of swimming, relaxation, peaceful camping under open smog-free skies and the companionship of others who enjoy the great outdoors—then try my fishin' hole—Lake Powell. □

*Next month Stan Jones concludes his Lake Powell fishing guide by telling you how and where to catch the elusive Rainbow Trout and the hard fighting Large Mouth Bass.*

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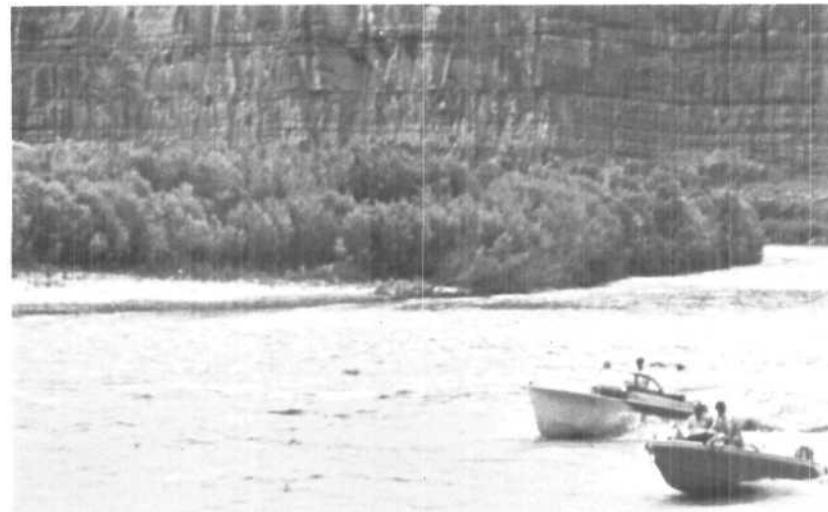
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# HUBS TO HOLE-IN- THE-ROCK

by Jack Pepper

*Color Photo by Enid Howard*

**S**TANDING ON the edge of Cottonwood Hill, I looked down on Cottonwood Canyon and its small stream which meanders for three miles until it empties into the Colorado River. With the aid of binoculars, I could see the muddy river and identify a crevice in the sheer cliffs on the opposite side of the turbulent waters.

This narrow and steep break in the sandstone escarpment is the famous Hole-in-the-Rock down which a group of Mormon pioneers nearly a century ago lowered their wagons and successfully conquered the first of hundreds of obstacles during their incredible trek across 200 miles of Utah "wastelands" in order to establish a new settlement on the San Juan River.

When the group left Escalante on October 28, 1879 on a "short cut route" they estimated it would take six weeks to reach their destination. It was not until six months later — six months of hardship and privation which was only overcome by their religious dedication — that the pioneers arrived at the San Juan River.

As I listened to the wind which seemed to echo the spiritual songs of the dedicated pioneers as they trudged across this wilderness area, I also heard Lynn F. Lyman reading to some members of our exploration party.

"In all the annals of the West, replete

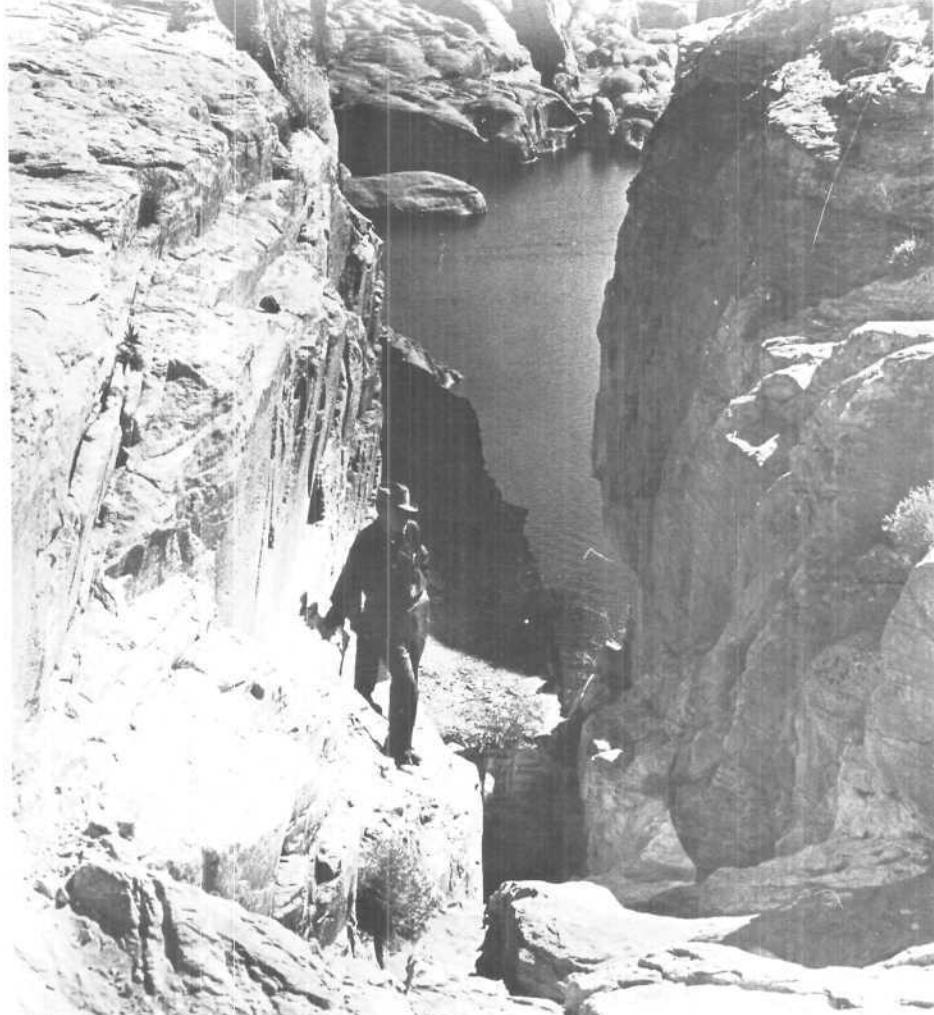
with examples of courage, tenacity and ingenuity, there is no better example of the indomitable pioneer spirit than that of the Hole-in-the-Rock expedition of the San Juan Mission.

"No pioneer company ever built a wagon road through wilder, rougher, more inhospitable country, still one of the least-known regions in America.

"None ever demonstrated more courage, faith and devotion to a cause than this group of approximately two hundred fifty men, women and children with some eighty wagons and hundreds of loose cattle and horses who cut a passage through two hundred miles of this country. Even the wily mountain sheep could not have negotiated the Hole-in-the-Rock before it was given a 'face lifting' by these pioneer road builders.

"Today their feat seems well-nigh impossible. Yet they proved that virtually nothing was impossible for a zealous band of pioneers. The story of the Hole-in-the-Rock expedition is an excellent case study of the highest type of pioneer endeavor that broke the wilderness and brought civilization to the West."\*

Lynn read the passage in a monotone and without visible emotion. Yet, all of us felt the pride of this venerable Mormon as he pointed out places of interest



Lynn Lyman, whose uncle was one of the leaders of the Mormon pioneers, stands midway in the famous Hole-in-the-Rock down which the intrepid group lowered their wagons, families and livestock to the Colorado River below. Photo courtesy

Miles Turnbull, publisher of the San Juan Record.

and showed the trail on his map. For Lynn's uncle, Platte D. Lyman, was among the leaders of the expedition.

And, on this occasion, Lynn Lyman was following the footsteps of his ancestors, for he was the "trail boss" on another expedition. However, instead of traveling in covered wagons into unknown territory, our group was making the "trek" in four-wheel-drive vehicles and being led by veteran guides.

The annual three-day "Hole-in-the-Rock Jeep Trip" is held every October and is jointly sponsored by the San Juan Travel Council and the Blanding Chamber of Commerce. It is open to all interested families who want to follow this historic trail and also see some of the most spectacular country in the entire world.

\*The excerpt is from David E. Miller's *HOLE IN THE ROCK*. This authoritative book not only relates the history of the incredible journey, but also quotes from the diaries of the protagonists and has detail maps of the trek.

passable since they have not been in use for more than 75 years.

In order to visit the Hole-in-the-Rock, we retraced our previous day's trail and, returning to the paved highway, drove to Hall's Crossing on the Colorado River.

The following morning we relaxed our driving muscles as we boated down the river to the Hole-in-the-Rock. Only by climbing (and crawling in some places) up this steep incline and examining the marks of the wagon wheels still visible today can you comprehend the fortitude and ingenuity of those Mormon pioneers.

As Miles Turnbull editor of the *San Juan County Record*, who was on the trip stated, "I have read about this and now I have seen it—but I still find it hard to believe it could have happened."

But it did, as recorded in the diary of Milton Dailey, one of the pioneers:

*The first forty feet down the wagons stood so straight in the air it was no desirable place to ride and the channel was so narrow the barrels had to be removed from the sides of the wagon in order to let the wagon pass through. It had to be rough locked on both hind wheels and then a heavy rope attached behind to which about eight men held back as hard as they could to keep the wagon from making a dash down the forty feet. The women and children took hold of hands*



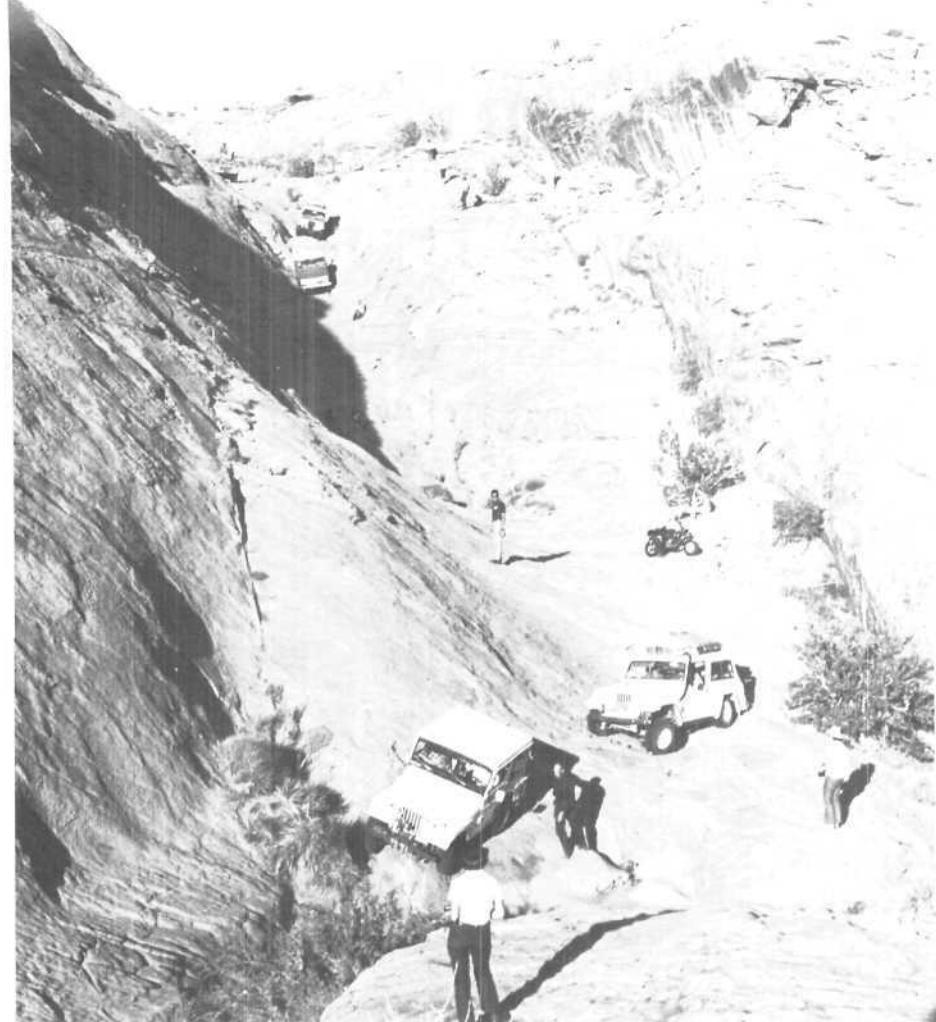
and slid down this forty feet as they couldn't walk.

And Dailey was describing only one part of the descent!

Prior to the Hole-in-the-Rock descent, plans had been made to bring barges down the river to ferry the wagons across. The rafts were hand-oared and were approximately 18 feet long and 16 feet wide, carrying two wagons at a time. The horses and cattle were forced to swim the river. The crossing was made on January 26, 1880, three months after leaving Escalante on what was expected to be a six-week trip. Two days after the crossing, the river froze and for the next three months the pioneers fought freezing weather and snow.

Here is an excerpt from the diary of Platte D. Lyman:

*Friday, Feb. 13th, 1880. Have been busy during past 3 days moving our wagons up the Cottonwood Hill where it took from 4 to 7 span of horses or the same number of oxen to move 1 wagon. The weather has been very cold and stormy part of the time. We are now camped 2 miles from the summit at what we call cheese camp. Two men from Panguitch came into camp a few day ago, they will stop and work on the road. They brought us 200 lbs. of pork and 40 lbs. of cheese from the Titling Office to be divided*



Although the Mormon pioneers nearly 100 years ago described "The Chute" (above) as a minor obstacle, today for four-wheel-drive vehicles it is a supreme test of a driver's skill. Rugged country through which the Mormons blazed a trail (lower left) is seen from Cottonwood Hill with the Colorado River and Hole-in-the-Rock in the distance.

among 70 men. The cheese was sold at auction hence the name of this camp.

As stated previously, it is the section from the east side of the Colorado River to Bluff, Utah that our group was following. So on our return trip from Cottonwood Hill we were going in the same direction as the Mormon pioneers—albeit in much more comfort.

Cheese Camp is located between the previously mentioned "Little Hole-in-the-Rock" and The Chute. It was in the area of Cheese Camp that we made our first night's camp after driving through this spectacular country of southern Utah.

The country is indeed spectacular, but the terrain is such that it tests the expertise and ability of even the most seasoned four-wheel driver. And The Chute is a prime example. I had been previously warned that my ability would be tested when we were ready to "Shoot the Chute."

I was the "desert rat" among this group of mountain-type Utah drivers, so I figured they were just kidding—that is until we

arrived at the top of the Chute. It is a V-shaped crevice of slick rock which descends five hundred feet in what appeared to me in a 90 degree vertical slope.

One of the guides, seeing the look on my face, asked me if I wanted him to pilot my jeep down the grade. Frankly, I wanted to say "yes" but then the thought of all those watching who would later say "that Desert Magazine guy sure chickened out" kept me back of the wheel.

The grade is so steep that only one vehicle is allowed down at a time. After what seemed like an hour (it took all of five minutes) I arrived at the bottom with all four wheels on the ground.

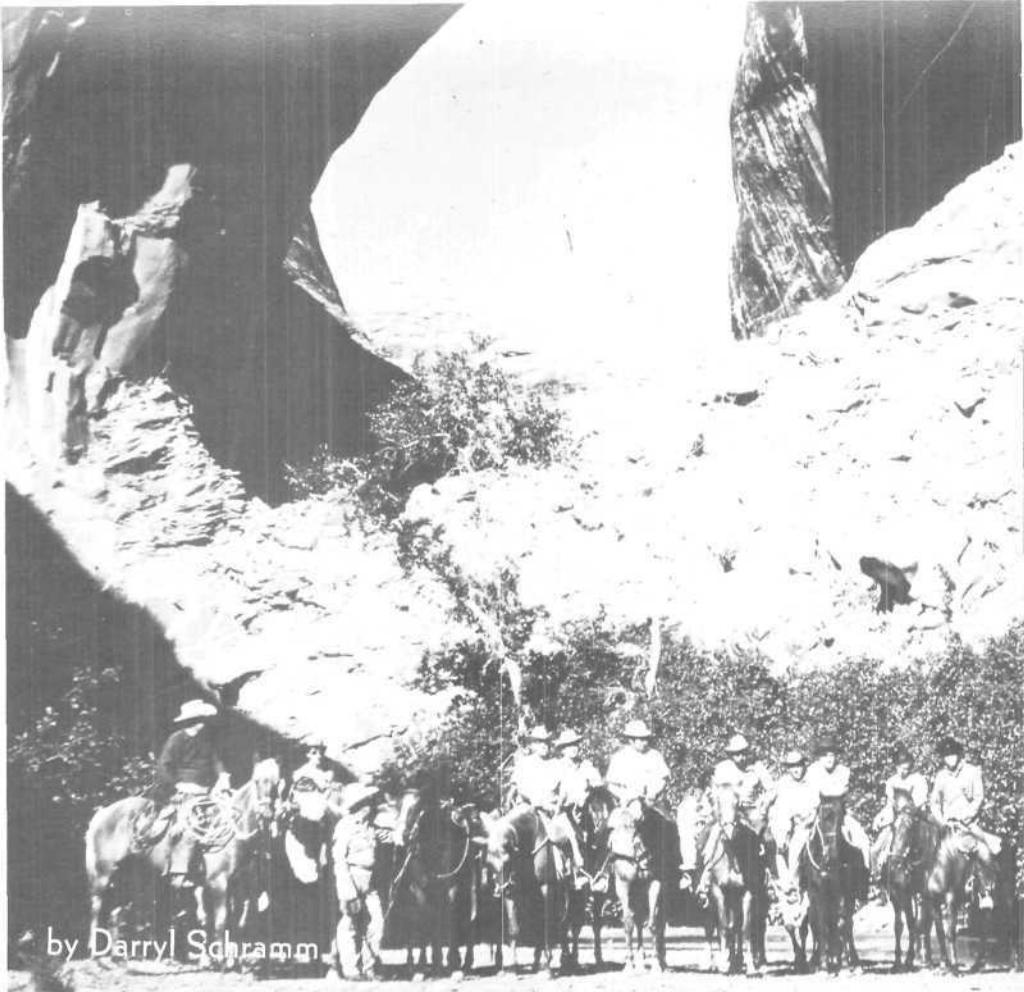
However, on the return trip, I didn't use four wheels. At least that is what Lynn Lyman told me when I arrived at the top. "You are the only driver I ever saw who drove up The Chute by just using the front right and back left wheel," he said. "As a matter of fact, you didn't drive, you kind of flew up."



*Jacob Hamblin Arch, named after an early Mormon explorer, towers above the riders as they start their second day's adventure down Coyote Canyon toward the Escalante River*

# DOWN UTAH'S COYOTE CANYON

by Darryl Schramm



THE VAST wilderness area around Escalante in Southern Utah is one of the few unspoiled public lands remaining in the United States, so when my friends asked me to join them on a four-day horseback riding trip down Coyote Canyon I immediately accepted their invitation to go along.

Plans had been made to haul the horses from Cedar City to Kaiparowits Plateau which lies south of Escalante and approximately 159 miles from Cedar City. Our group consisted of sixteen "young" men whose ages ranged from 14 to 70. Some were father-and-son combinations and the rest were good friends. Nineteen horses, including three pack animals, were loaded into pickups, stock trucks and horse trailers as we began our search for adventure.

We started our trip on Utah State 14 which travels over Cedar Mountain. The

*A swimming hole provided a bath after a hard day's ride.*



The graded road we took from Escalante, which passes the places mentioned above, follows approximately the trail of the stalwart Mormon pioneers who nearly one hundred years ago made their famous trek from Escalante to the San Juan River.

The day was quite warm and there was little shade for the horses, so we hurriedly unloaded the gear and filled our saddle bags, strapping our sleeping bags on the back of the animals.

At first the terrain was dry, desolate and not very inviting. The sight of bleached bones of a cow and a lizard looking for shade made me question my decision to join my friends. But that soon changed as we started down and the canyon walls became steeper.

We finally came to where a small trickle of water was coming out of the cliffs which was greedily drunk by the horses. The trickle kept getting larger and, as we rounded a bend, there was Coyote Creek.

The air was cooler now as the canyon walls shielded us from the sun. The sides of the canyon walls came right down to the stream's edge, forcing us to walk our horses in the middle of the stream bed. Little frogs kept jumping aside as they

avoided the horses' hoofs. This beautiful canyon is similar to those I have seen in Zion National Park with grasses, ferns and other colorful vegetation growing in the canyon walls. The sandstone rock formations are mostly red in color with scatterings of white intermingled in the strata.

During the late afternoon the shadows were longer and the canyon deeper and more narrow. Jacob Hamblin Arch was the site of our first night's camp. Named after an early Mormon explorer, this huge natural rock formation framed the sun as it gradually set in the west.

The horses seemed grateful as the cinches were undone and the saddles taken from their back. After washing off their sweat and dirt with the water from the creek, we tethered the animals along the creek bed so they could feed from the grass.

Wood was gathered and the roaring fire soon heated the Dutch ovens which smelled of frying mutton and sheepherder "taters" which is a delicious mixture of potatoes, bacon and onions. Although we were reluctant to drink the water from the creek, we solved the water problem by collecting drops of fresh water in a plastic bag as the precious liquid dropped down



Coyote Creek is a labyrinth of canyons and sheer sandstone walls. Photos by author.

horses neighed in challenge as we passed the Cedar Breaks National Monument turn-off, beautiful Navajo Lake and Dixie National Forest. After turning onto U.S. 89 and then Utah State 12, our convoy passed through Red Canyon where the horses were a bit spooked as we went through several small tunnels which cut through the massive cliffs. This road also leads through Bryce Canyon National Park.

Arriving at the friendly community of Escalante we stopped for a few minor repairs. Although the mechanic at the service station was busy, he readily allowed us to use his equipment and then wished us "good luck and happy riding" as we headed south.

About four miles south of Escalante we turned off the oil road and continued south for 40 miles on a good graded dirt road. Along the way we passed such names as 10 Mile Wash, Half-Way Hollow, Devil's Garden, Collet Top, Twenty Mile Wash, Early Weed, Cat Pasture, Big Hollow and King Mesa, finally arriving at Willow Tank in Hurricane Wash, which was the start of our riding adventure. Willow Tank is one of the few watering holes for the many cattle which graze on the Bureau of Land Management public lands.

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from a spring in the cliff above.

As I snuggled into my sleeping bag and watched the glowing embers of the fire, I thought this was really an experience that every father and his son should have: plenty of tasty food, lots of good companionship and, above all, sharing the adventure of the day and the beauty of the night. I fell asleep under the twinkling of the millions of stars shining from the heavens above.

The next day we continued down Coyote Creek, looking at the colorful and unique formations. We saw Indian ruins high on the ledges of the canyon walls and wondered how these prehistoric people gained entrance to their homes. Additional arches were seen, such as Jughandle Arch, Skyline Arch and many smaller and unnamed arches. In several places, due to rock slides and waterfalls, we had to lead our horses above the stream bed.

Near the end of Coyote Canyon where it flows into the Escalante River, the trail follows along the mountain and at one point we were 1,000 feet above the stream. From here we could see Skyline or Stevens Arch silhouetted against the blue Utah sky.

Our trail led down to the Escalante River. Our original objective was to ride all the way to Lake Powell, but as we neared the lake we encountered quicksand, so we reluctantly turned back. Another night of telling stories around the campfire ended another great day.

The sun was shining as we awakened the next day and, since we were ahead of our schedule, we hiked to a nearby waterfall. The water was just right as we stood under the rocky ledge. The water wasn't deep enough to give the kids a dunking, but we tried.

I will always remember our last night in the canyon. Gentle rain started falling and thunder echoed through the canyon walls. To avoid being swept away in a flash flood, we moved to higher ground. Soon, however, the storm passed and we once again fell asleep under the open sky.

As we emerged from the canyon and returned to the waiting trucks, each individual was tired and rode in silence, but there was a memory and a desire to return again some day. If you're looking for that trip to tell to your grandkids, try the Coyote Creek/Escalante River by horseback or backpacking, it's GREAT!!! □



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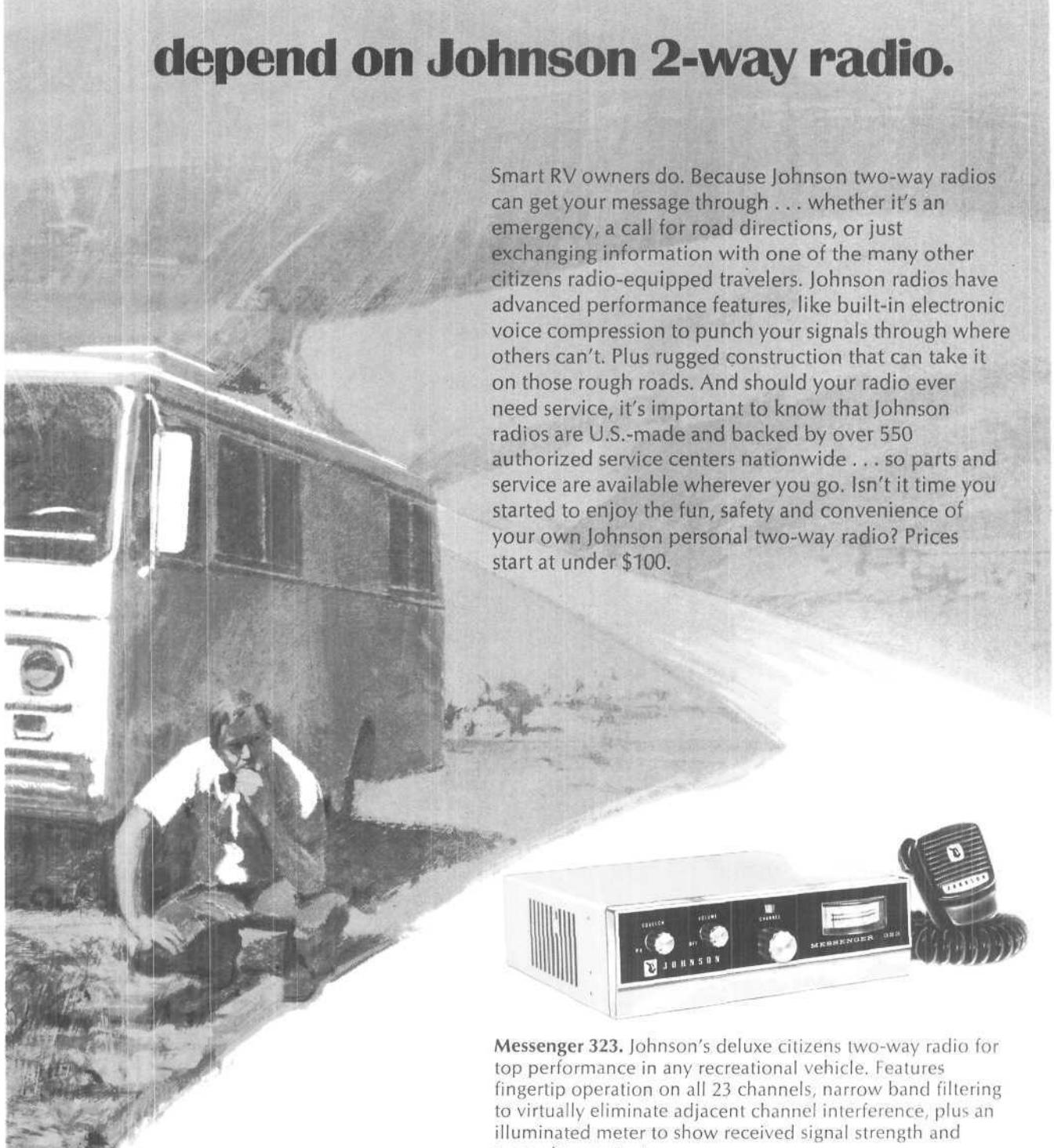
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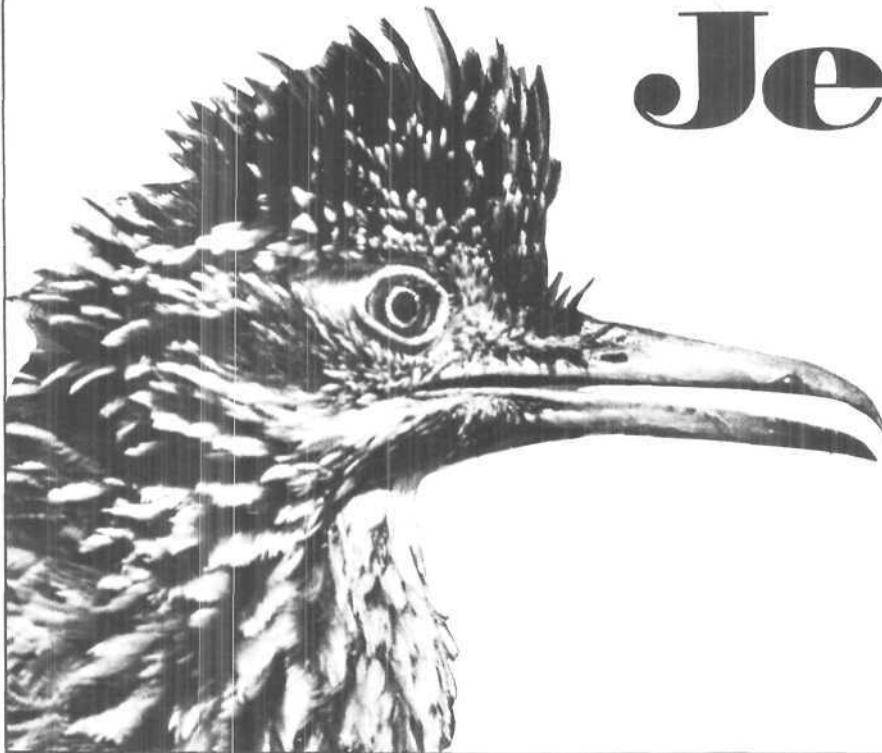
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# Desert Jester



by K. L. Boynton

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**Z**ANDEST OF birds, the roadrunner is the desert's jester. A mountebank in his razzle-dazzle costume, he is the very spirit of impudence from the saucy top-knot on his head to the far end of his flippant tail. Not a whit cares he for the majesty of the desert whose deadly might cowes many another bird and animal. Brash in his supreme self-confidence, he lives his life with gusto, engaging in fun and frolic in the face of the worst of desert conditions.

But, like many a clown, this bird is nobody's fool. He has great native sagacity, quick wits and a very tough body kept in tiptop condition. Physically and psychologically he easily handles the worst of the desert, so why shouldn't he have a good time while he's doing it?

Take the matter of food. What sounds good for today: grasshoppers? crickets? caterpillars? beetles? centipedes, mice? Or how about that lizard legging it across the sand? Swift as the lizard is, the roadrunner is even faster. A flurry in the dust, a

snap of the long bill, and the lizard disappears from sight, loser to the feathered speed-demon.

Built for getting over the ground at astonishing speed, the roadrunner is a fine example of what can be done with a bird's body to make it a two-legged sprinter. His legs have been greatly elongated for running action, and the muscles of his pelvic region correspondingly increased in length, producing a pair of pedal extremities that can drive him over the ground at a speed of 18 mph. Streaking across the desert, the roadrunner makes himself as horizontal as possible, his long neck stretched out in front, his narrow body flattened, his tail streaming out behind. Inherited from his ancestral Cuckoo relatives, his long tail is under constant muscular control. It aids in keeping his balance; it is used as a rudder for quick direction changes, so characteristic of his wild zigzag course; and, fanned out suddenly, it acts as a quick brake.

Desert-expert Edmund Jaeger reports

witnessing some olympics where the contestants were two hawks and a roadrunner on the lam. The hawks, sure of a dinner, were pursuing the roadrunner who, gaily dodging, led them a merry chase around a creosote bush, ducking and running back and forth until one hawk gave up entirely and flew away. The other lit under a nearby bush to get his breath. The roadrunner promptly rushed over to where the hawk was and stirred him up again for more fun and games, pestering him until the hawk was glad to depart and leave this nutty bird alone. And the roadrunner, topknot high, and clacking his bill insolently, tore off at top speed.

To a roadrunner, there's nothing like a battle of wits and skill and daring to enhance the appetite. Hence his proclivity for snake hunting. And, if it's a small rattle, so much the better. The bird circles the coiled and rattling snake just out of reach, going round and round, feinting, jumping, moving, dancing here, there, everywhere until the snake has difficulty

to keep coiled and faced in the right direction, head up ready to strike.

Even the bird's plumage adds to the confusion. Its razzle-dazzle pattern, made of dark streaks and light dashes, is hard to look at as the madly jumping bird whirls around with the frayed out edges of its feathers blowing. Everywhere there is motion, blurred motion, and even blinding flashes as the sun hits the shiny blue, green, violet highlights in the long tail feathers. No wonder the snake is confused and misses his strike, hitting only feathers. Tiring finally, the snake lowers its guard an instant, and the roadrunner, seizing this split second stabs his bill at the base of the snake's brain.

A few good whacks with the bill softens up the carcass for easy swallowing and down it goes, head first. True enough the snake may be too long to go down entirely, and so the roadrunner may go about his business with a few inches of his lunch still hanging out of his bill. But his digestive department is hard at work and in practically no time enough room has been made in his stomach for the rest of the cargo.

So much for the problem of provender in the desert, that of water being of less importance, since the diet of lizards and snakes and insects provides plenty of moisture.

What about coping with the extremes in temperature?

Roadrunners are very apt to sun themselves during the early morning hours and from time to time on clear cool days, sitting about with their backs perpendicular to the rays of the sun looking puffed up and with their wings drooped a little. Observing this behavior both in the desert and among laboratory birds, the team of zoologists Ohmart and Lasiewski suspected that something besides loafing around in the nice sunshine was going on.

Investigations showed the birds were warming themselves quickly by hoisting up the feathers on the backs of their necks and between their shoulder blades, thus exposing areas of black skin underneath. Also exposed was the soft black plumage of the feather tract along the tops of their backs. Black and dark colors absorb solar radiation directly and so the birds, equipped with special areas of black skin strategically placed, were bringing up their body temperatures quickly by means of an outside heat—the sun. This eliminates the need for their bodies to put out the expen-

diture normally needed for the job, a great saving in energy.

It also turns out these birds save energy during the cold desert nights by letting their temperatures fall as low as 93 or 94 degrees from a normal night temperature of about 101. Coasting through periods of adverse temperature this way, and being able to warm up quickly in the morning by direct solar heat, roadrunners have it made. Hence their remarkable ability to survive winter temperatures in their range. Particularly valuable this, since protein food in the form of insects and lizards and snake is apt to be scarcer, the plant substitutes not furnishing as much energy heat.

The roadrunner copes with high tem-

perature living with the same aplomb. To be sure Zoologist Calder found that the birds in the Mojave and Sonoran deserts were less active in midday at air temperatures around 105 degrees, their inactivity thus reducing the need for unloading excessive body heat, and saving water by cutting down on the need for evaporative cooling. But the roadrunner also has another big water conservation deal of his own, besides sensibly taking it easy when it's too hot.

recently discovered by Zoologist Ohmart: It acts as an accessory kidney, for such a gland can get rid of about six times as much salt as a kidney system at the same time. Salt removal is extremely important for the roadrunner not alone as a temperature control factor, but because he takes so much of it aboard in his lizard diet.

Lizards, particularly the vegetarian kinds, are loaded with it because their diet of plants is high in salt content. It is also believed that the roadrunner has a system of reabsorbing body water in the lining part of his intestine and rectum. His feces is further dried out in the cloaca before final elimination which also saves water.



*Nothing seems to bother these fun-loving and zany denizens of the desert.*

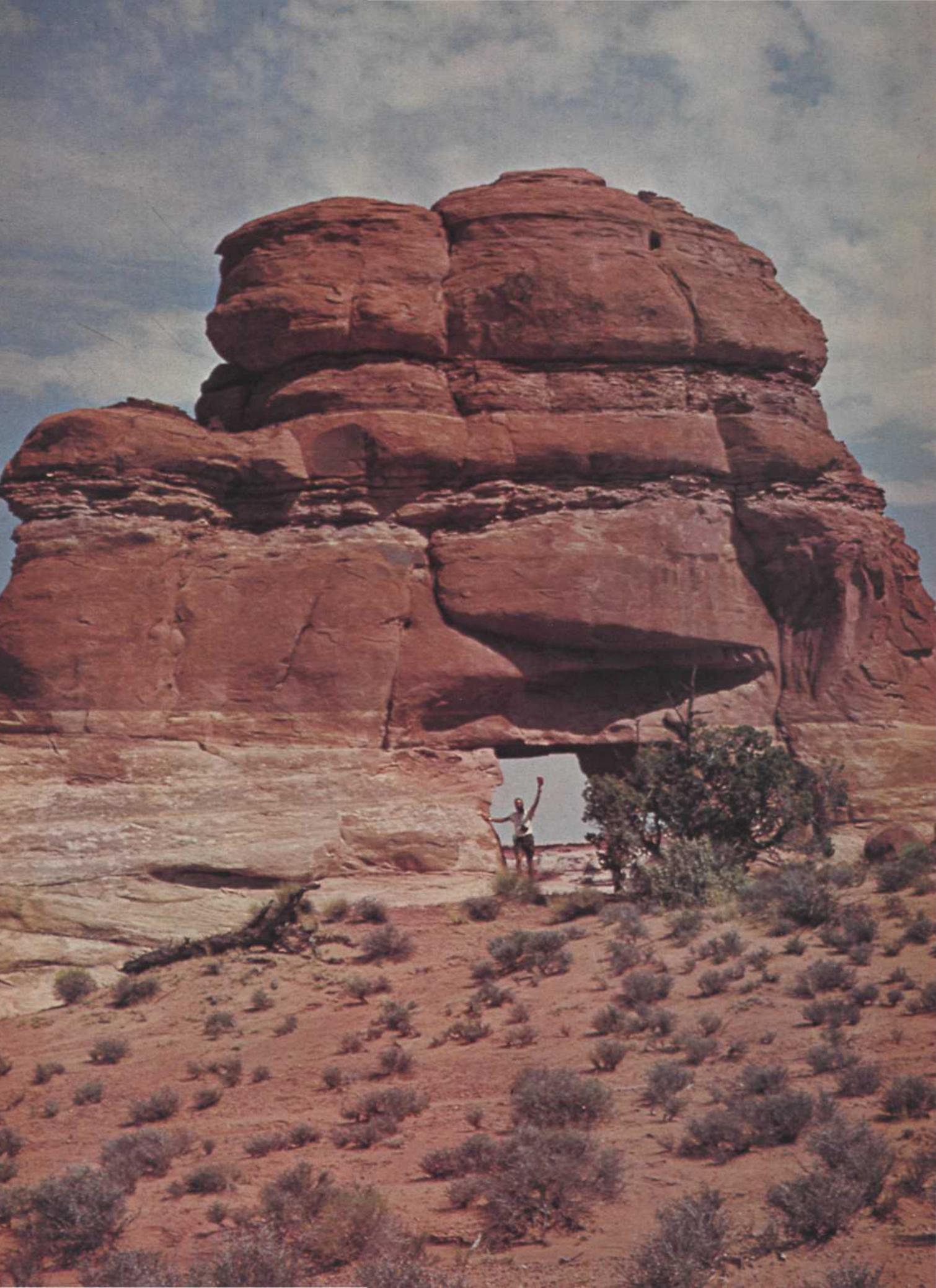
perature living with the same aplomb. To be sure Zoologist Calder found that the birds in the Mojave and Sonoran deserts were less active in midday at air temperatures around 105 degrees, their inactivity thus reducing the need for unloading excessive body heat, and saving water by cutting down on the need for evaporative cooling. But the roadrunner also has another big water conservation deal of his own, besides sensibly taking it easy when it's too hot.

This is a salt secreting gland in his nose,

Plenty remains to be learned about the daily lives of roadrunners. Biologists Kavanau and Ramos decided to play some games with captive birds, a couple of charmers they had hand raised. They installed an activity wheel in the birds' quarters and sat back to see what would happen. An activity wheel is a gadget that provides a chance for a caged animal to get a lot of exercise by running an endless straight path as long as he likes.

Keeping track of the times the birds

*Continued on Page 52*



# LAND OF STANDING ROCKS

THE "LAND OF Standing Rocks" in southeastern Utah lies adjacent to the Needles Section of Canyonlands National Park, but west and across the Colorado River. Only the river separates the two areas, but it requires a full day's driving to reach the outer fringes of Standing Rocks Country.

This remote and little known land presents a pageant of many moods and faces to those who look out over its vastness. Some detest it as a savage land void of charity to anyone lost within its canyons, while others view it with tenderness and compassion, having established a deep closeness with its solitude.

In the year 1859, two men stood on the canyon rim gazing out over the junction of the Green and Colorado Rivers. (The Colorado was called the "Grand" then.) Capt. J. N. Macomb headed a United States Government Expedition to explore and map the unknown Colorado Plateau country. His opinion of the particular section they were looking at was that it was a "worthless and impractical region." His geologist companion, Prof. J. S. Newberry, in his report described the same scene as "strange and beautiful."

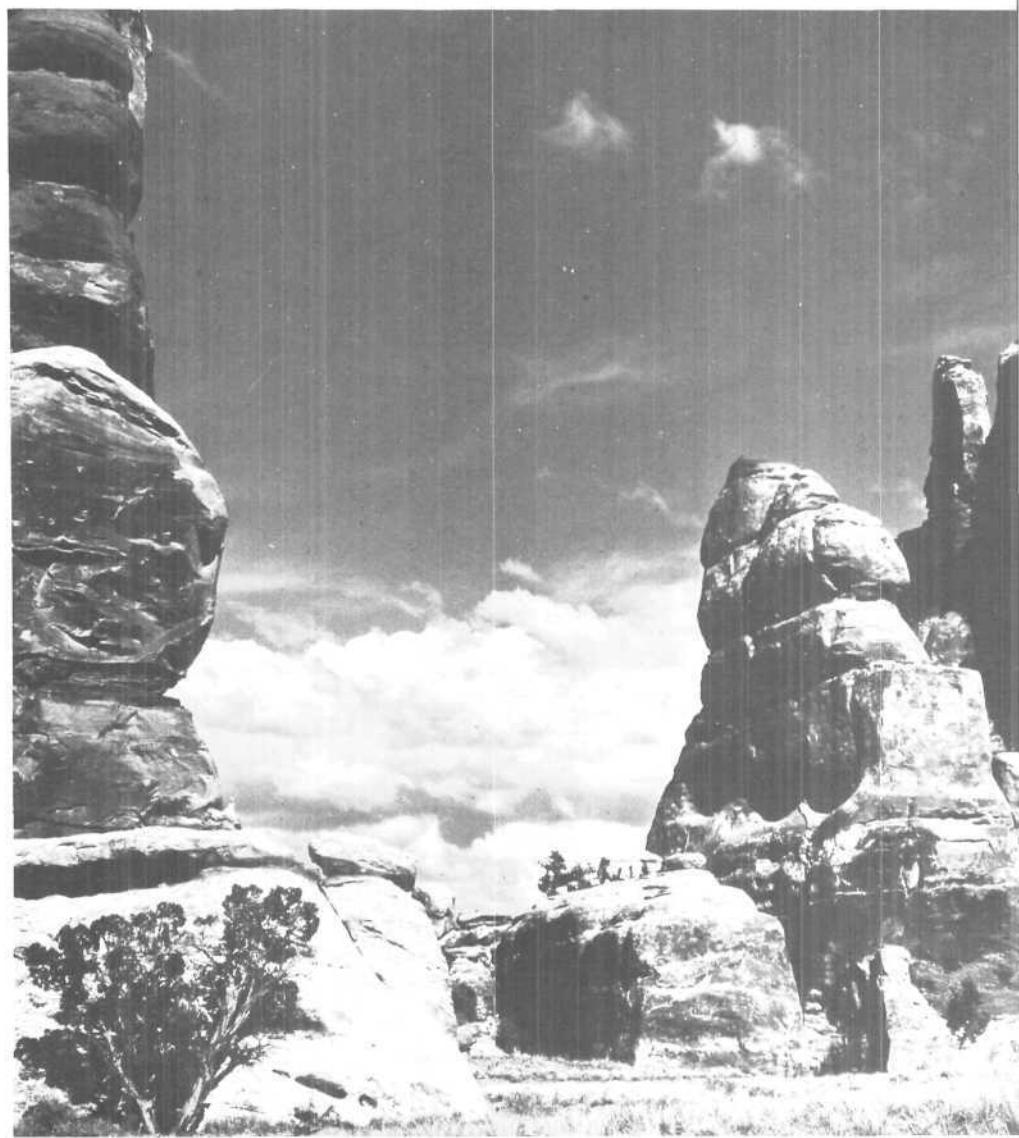
Captain Macomb would be astounded that his "worthless and impractical region" has achieved National Park status. The bill to extend the boundaries of Canyonlands National Park was signed by President Nixon in November, 1971. The extension adds approximately 80,000 wilderness acres, rich in scenic, geological and historical features to the park, and includes the Orange Cliffs, Land of Standing Rocks and The Maze, all of which are certainly National Park stature and quality. The bill increases the size of the park to 337,258 acres, as against its former quarter of a million.

Roads leading into this sprawling land

by Enid C. Howard

*Photos by the author*

*Beehive Arch (opposite page) and the Spanish Bottoms trail (below) are part of the Needles Section of Canyonlands National Park.*



are minimal four-wheel-drive tracks and will probably be kept that way. Joining a guided tour is definitely the wise way to explore this remote country, and Canyonlands Tours at Monticello, Utah, has for several years scheduled five trips a year to Land of Standing Rocks and The Maze. Kent Frost, who operates the tours, knows the area from twenty years of jeeping and hiking its canyons, mesas and valleys.

Our group of five travelers, two drivers, and two jeeps loaded with gear, water and gas, left Monticello driving north on U.S. 163 to Green River, Utah, as it was necessary to cross the Colorado River at Moab, and the Green River at the town of Green River, to enter the country west of the rivers.

Our first days driving across the rolling sand hills of the Green River desert did not prepare the guests for the stop at

French's Spring, hidden in a small canyon. Kent said the spring had produced water as far back as he could remember, but the glory of this little oasis in the arid country are the wild roses that grow in profusion on the shadowed banks of the spring and fill the air with fragrance.

Another stop at the Millard Canyon Overlook provides a first glimpse of the impressive expanse of Elaterite Basin below. Our first camp is made on the rim of the Orange Cliffs where the view east towards the Colorado River can only be described as a giant staircase descending in disorderly fashion from the edge of the world. In the distance, needle-topped Bagpipe and Elaterite Buttes dominate overall. They stand tall among a collection of lesser monuments with Elaterite Basin where wide or narrow benches break the whole into erosional levels.



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Our guides had told us we would "do" the Flint Trail the next morning. Some of the guests experienced a case of, "Surely you aren't going to drive down *that*?" when they had their first look at the roadway. Over the edge of the Orange Cliffs, the trail was hacked out of the Wingate wall originally as a passage for sheep and cattle, and clings to the cliff in a rather fragile manner.

The jeeps had a sneaky way of sliding over large rocks, crossing repaired washouts with inches to spare at the edge of nothing, then backed a couple of times to turn hairpin corners. Some of the passengers preferred to hop-scotch over the rocks and take pictures rather than stay with the very competent drivers, who declared it was perfectly safe to ride.

With the Wingate section of the trail behind us, we followed the meandering jeep road through Elaterite Basin across the colorful Chinle strata along the cliff talus ledges high above the Teapot Rock landmark in the Waterhole Flats country. Finally, our drivers told us we were "down" and made our camp on the flat rock bordering Waterhole Canyon below the Orange Cliffs.

We had crossed tortured, eroded land, from the highest rims of the cliffs, to the base of the talus below the Wingate walls that are the Orange Cliffs, in one day, and now our view was narrowed as our eyes

*Looking back toward the Doll House figures on the trail to Beehive Arch.*



and is called Lizard Rock. We camped in the heart of Land of Standing Rocks, of which an observing old-timer remarked, "There is as much country standing up as there is lying down."

Here at Lizard Rock the full sweep of this magnificent country becomes apparent. Detached buttes, monuments, pinnacles, minarets, lonely standing spires frame the overall scene of the, for the most part, unknown and mysterious Maze.

The ridge of stone, sand and the disintegrating red Oregon Cutler formations that surround Lizard Rock forms the divide between the east and the west Maze. Canyons east of the ridge cast their silted water directly into the Colorado—those west of the ridge flow to the Green and eventually join the Colorado at the river's confluence.

One observes the Maze, but unbelieving—the span of the low plateau into the distance, below the higher standing rocks, appears as a fairly level rock valley with

followed the alignment of the cliffs to see them fade into distance beyond sight. The escarpments, aflame with color in the sunlight, turned misty-lavender as daylight blended with evening shadows. They lie on the land in a jagged north-south line from the Flats area to about forty miles north where they become a part of the Green River canyon walls. They cannot be ignored as they dominate the highest level of the Land of Standing Rocks.

We experienced more up and down skilled jeeping on the third day when we headed the many lateral canyons of Calf and Range Canyons, two main tributaries to the Colorado, as we traveled slowly toward the pinnacles of standing up rocks that speared the sky on the north horizon. By evening we were at the base of the quarter-mile long, sinuous, crossbedded formation that resembles a giant lizard,

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a bumpy surface. As you approach the valley the bumps acquire height, are rounder and you realize these are the top-most edges of plunging canyon walls that twist and turn upon themselves until the entire mass assumes the appearance of an interwoven, writhing depth that has no beginning, or end.

Hidden within these depths exists a silent world of alcoves, caves, patinated walls, small dells and glens of untouched wilderness. One may stroll along the

winding, narrow sandstone tops of The Maze canyons, but will always be stopped by a sheer wall that drops abruptly five to eight hundred feet. There was much hiking by the guests all around this area, for it cast its magic spell and they could not seem to absorb enough of its beauty.

It was here the camera buffs unveiled the choicest tools of their craft, and had a field day. In the clear air, all colors are bright and distinct—red is very red, greens have depth, pinks, yellows, blues, chocolate browns are intense.

East of Lizard Rock are a group of long flat rock formations standing on edge quite close together called The Fins. There is a great arch in one of the canyon walls near The Fins, and it is named Randall Henderson Arch, dedicated to the founder of *Desert Magazine* who explored and spent much time with Kent here in Standing Rocks in 1956. It was Randall who named the beautiful little park near the river cliff, "The Doll House."

On the fifth day we jeeped to The Doll House. The one hour trip seemed all too short when the vehicles stopped in a meadow deep with grass, surrounded by the "doll" figures of Randall Henderson's imagination. The pink and white spires are a continuation of the Needles formation directly across the river in Canyonlands National Park. They encircle the lovely grassland meadow into an enchanted private world.

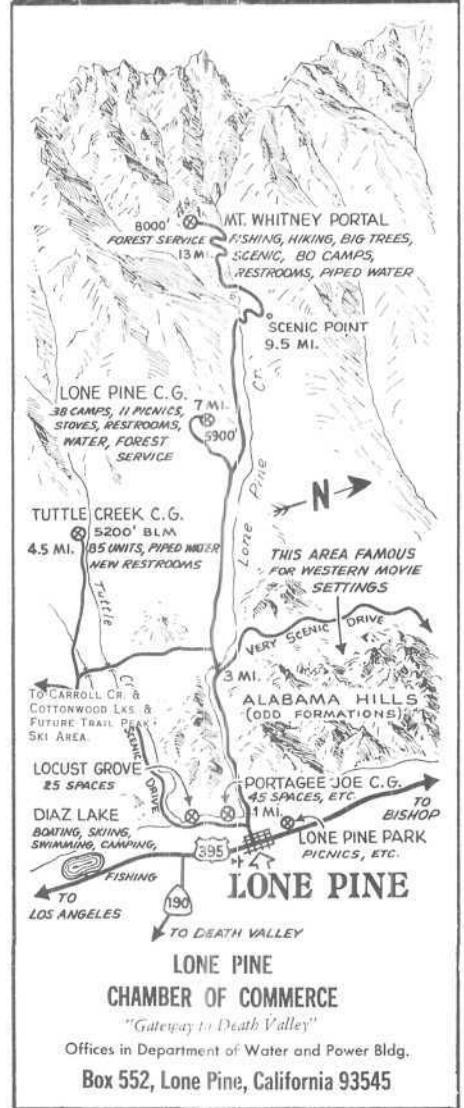
The Doll House east wall is the canyon rim 1,800 feet above the Colorado River. A horse trail switchbacks down the steep talus to the broad meadows of Spanish Bottoms at the edge of the river, and is said to be part of a trail used by the Spaniards who put together the Spanish Stairs, a section on the path that was so sheer, incredibly large slabs of sandstone were cantilevered into position to support horses and men. The Spanish Bottoms river crossing was well known among early settlers and was, according to reports, used by outlaw Butch Cassidy's gang on their way to Robbers Roost hideout quarters. The trail is still used by hikers who can last the 1,800 feet down, and back to the top.

An unusual Arch with an unusual name is Beehive Arch, a short walk from The Doll House, and certainly worth seeing. A most pleasant stroll for the less physical guests who just want to stretch their legs a bit, take pictures and relax.

The jeep road ends at The Doll House—so we retraced our route to Waterhole Flats and made our exit from the Land of Standing Rocks through terraced country, south to the Colorado River bridge at Hite, and back to Monticello.

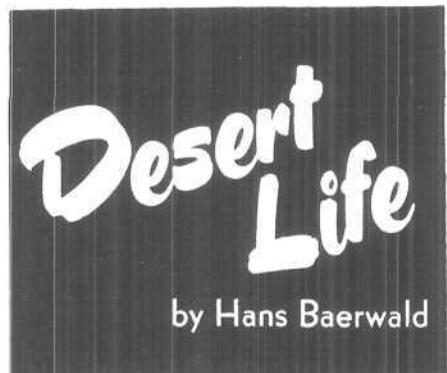
Visitors depart with reluctance this amazing land that has known Nature's fury in its shaping. It has been this writer's privilege to visit it in all seasons, and observe its moods. Sullen in the heat of July and August or gay and brilliant after a shower that sends precious water rippling over sand and bedrock with noisy sounds of its journey to the river. After a snowfall—aloof, icy, with chilling winds that whip through draws and whistle through cedars and pinons. At night in the deep canyons—where indigo-black skies, alive with sparks, will not allow one to sleep for fear of missing something important. On the foot trails, where life walks softly with one.

Awareness and appreciation of the power of Nature to build, then destroy the beauty created, is the largest feeling one carries with them when they have passed through "The Land of Standing Rocks." □



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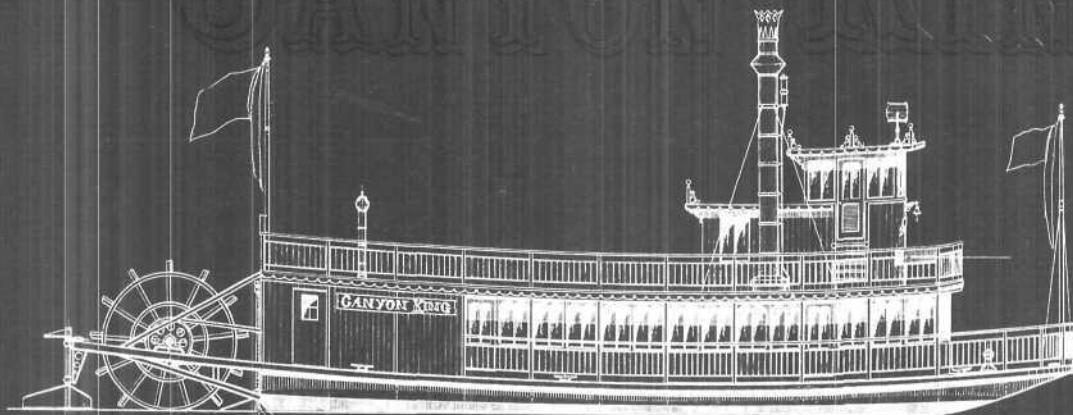


Although he looks deadly, the California King Snake is harmless. He feeds on smaller snakes and lizards. Averaging between three and four feet, he has black and white bands.

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# America's Newest National Park



ESTABLISHED IN 1937, Utah's Capitol Reef National Monument originally was comprised of 61 square miles covering some of the country's most spectacular scenery. The area is so spectacular and pristine that the former Monument has been expanded to 215,000 acres and last December it was designated as America's newest national park.

Today Capitol Reef National Park extends from above Utah State 24 east of Torrey and south to the edge of the Glen Canyon National Recreation Area and Lake Powell. This southern area near Lake Powell is known as the Monocline Section and includes the Waterpocket Fold.

*Carved by flowing water and blowing sand, Hickman Bridge is 72 feet high with a 133-foot span.*

A giant doubling up of the earth's crust, the Waterpocket Fold's western edge is exposed as a high cliff of brilliantly colored rock layers. It extends from Thousand Lake Mountain southeast for approximately 100 miles to the Colorado River. It can only be traversed in a few places. One of the most spectacular is the passenger-car road from Escalante to Lake Powell through the Burr Trail (See Desert, May 1971).

The northern area of the new Park contains the main visitor center located on Utah State 24 east of Torrey just as you enter the Park. The headquarters has a wealth of information, including an informative display of things to see and what to do in the Park. Maps for driving excursions, hiking trails, camp grounds and other facilities are available.

Traveling west on Utah 24 you come to a viewpoint near Twin Rocks soon after passing the entrance to the Park. Two miles beyond, on the right, is the Motor-man and just beyond that is Chimney Rock. About one mile beyond Chimney Rock a dirt road turns right and at the end of the road a short hike will take you to Sulphur Creek Gorge.

For those coming from the east, the visitor's center is located about 6 miles from the entrance to the Park along the scenic Fremont River Canyon. There are parking areas for taking pictures and for those who want to take the hikes to Hickman National Bridge and Cohab Canyon.

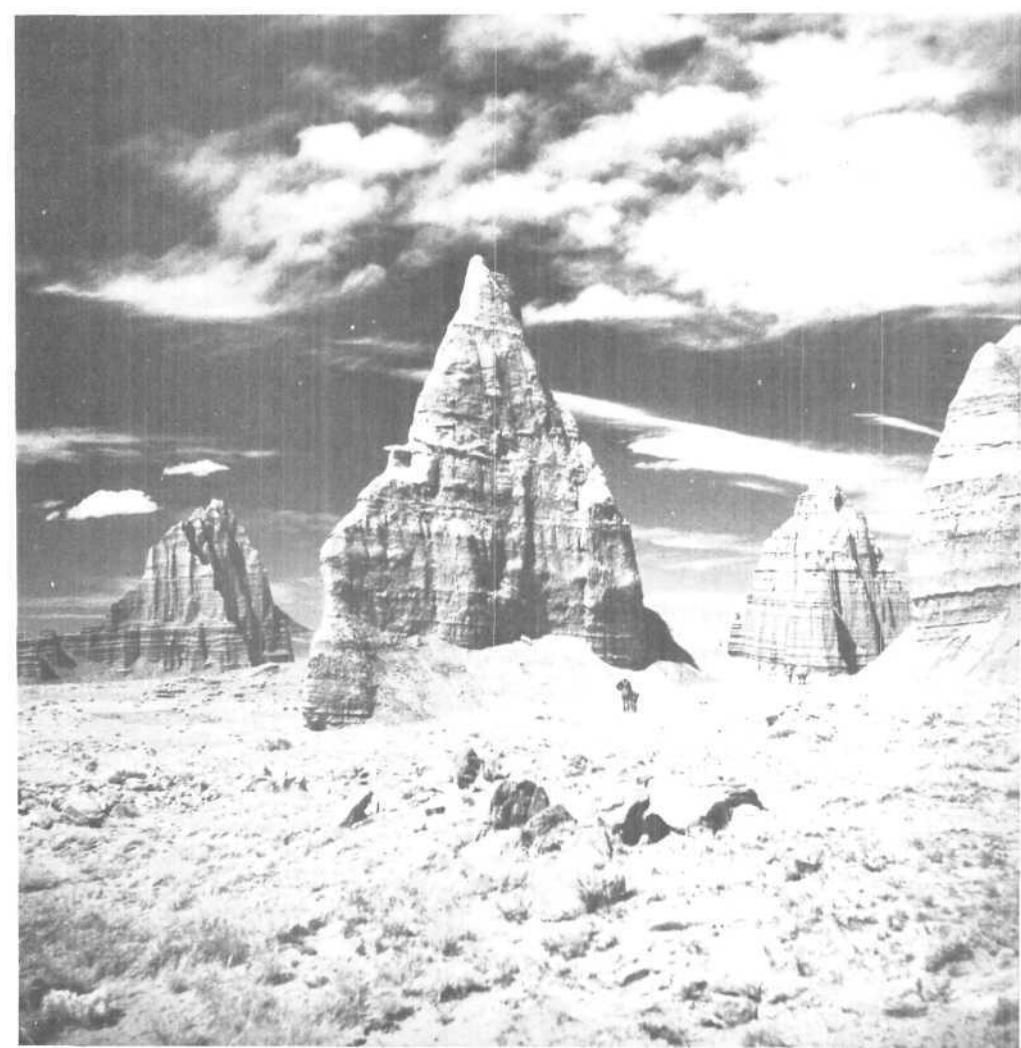
The self-guiding trail to Hickman Bridge is an easy one-mile hike. Carved by flowing water and blowing sand, the bridge is 72 feet high and has a 133-foot span.

From the visitor center, a road leads southward to, and beyond, Capitol Gorge. Along this route are road spurs leading into Grand Wash and to Pleasant Creek. About two miles into Capitol Gorge there is a parking area from which trails lead to the top of the reef and the Golden Throne. Prehistoric Indian petroglyphs can be seen on the cliffs along the way.

Although much of the spectacular scenery in this new national park can be reached by passenger car, many more isolated and scenic areas can be visited only by four-wheel-drive vehicles. Guided tours into these more isolated areas are available. Whether you go by passenger car, four-wheel-drive vehicle, or both, a visit to America's newest national park will be a rewarding experience. □



*Two of the many major attractions in America's newest national park are Waterpocket Fold (above), a brilliant 100-mile geological formation extending along the Colorado River, and the majestic spires (below) of Cathedral Valley.*





Minor repairs to one of the vehicles brings the caravan (above) to a temporary stop just before reaching Cottonwood Hill. Nearly 100 years ago this same spot on Wilson Mesa (below) was the campsite of the Mormon pioneers.



Lynn Lyman, trail guide, Enid Howard, Desert's Utah associate editor, and Miles Turnbull (right), publisher and owner of the San Juan Record, discuss the incredible Mormon trek across the Utah wilderness.



## HOLE-IN-THE-ROCK

Continued from Page 33

My inflated ego was completely deflated a few minutes later, however, when, while resting from my "ordeal" I read another passage from David Miller's *Hole In The Rock* that The Chute gave the Mormon pioneers little problem compared to the hundreds of other obstacles they encountered during their incredible six-month trek across the virtually unexplored wilderness of southern Utah.

After following part of their trail I firmly believe that only a dedicated group could ever have survived and completed the mission. So for a trip into history and to see some of the world's most scenic country, I suggest you join the next "Hole-in-the-Rock Jeep Trip." If you do, you

### A WORD OF CAUTION

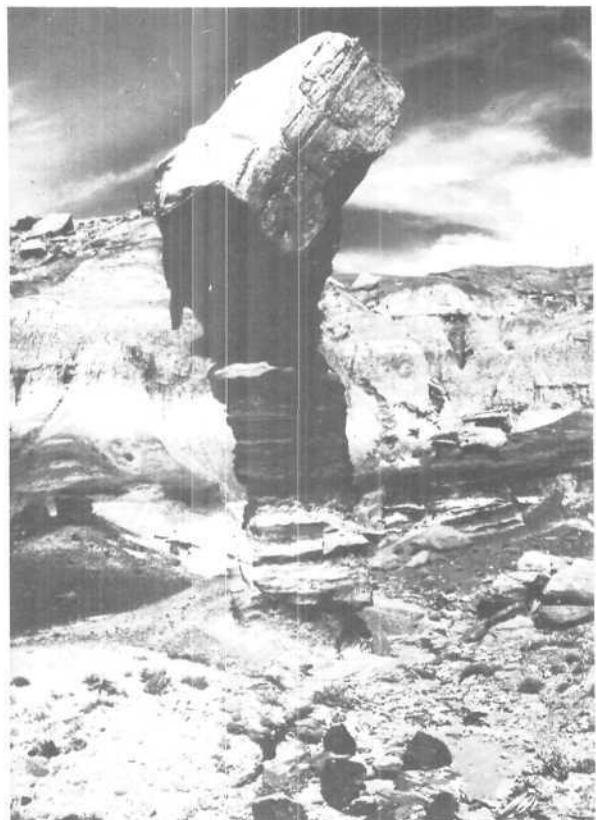
Only veteran guides who are familiar with this isolated and rugged area of Southern Utah can follow the Mormon Trail described in this article. Drivers of 4WD vehicles should not attempt to enter the area without either going with the annual Blanding Chamber of Commerce safari or with guides licensed to enter the wilderness. For information relative to the annual safari write to the Blanding Chamber of Commerce, Blanding, Utah 84511. For information on individual guide service write to Desert Magazine Palm Desert, Calif. 92260.

also will receive a diploma which I proudly display at Desert Magazine and which states:

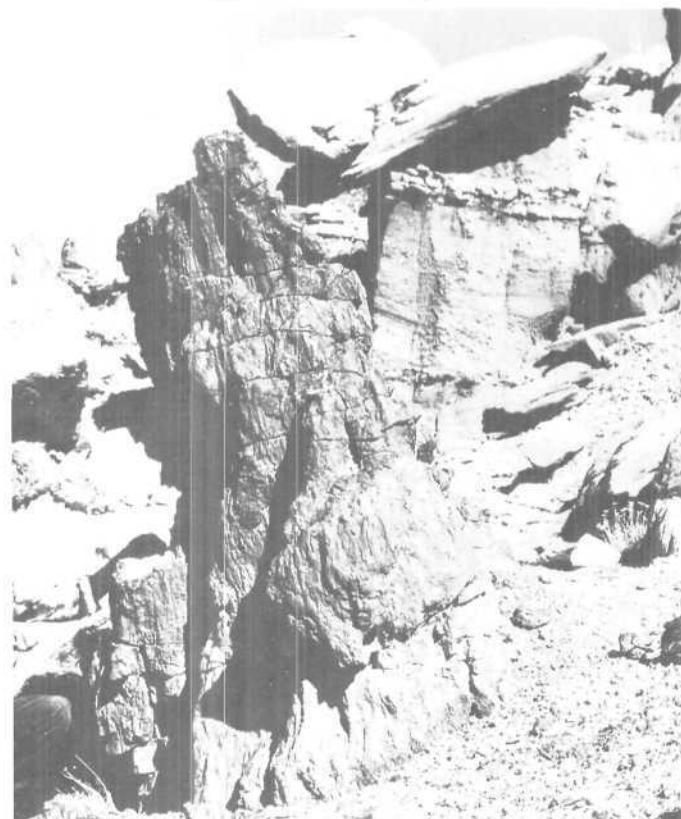
"This is to certify that Jack Pepper has endured the dangers of lizards, scorpions, quicksand, Indians on the warpath, occasional brontosaurus encounters and similar brushes with extinction along primitive trails in the land of rocks and canyons; has also endured the pain of aching muscles and tired bones, but has survived solely because of the good food, the pleasant company of companions, and the unsurpassed beauty of Nature's most unique wonderland. Therefore, the above named is hereby confirmed as a member of the elite group known as the Canyonlands Explorers Club."

And that's quite a tribute to an old desert rat! □

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*Standing Log (petrified), Circle Cliffs.*

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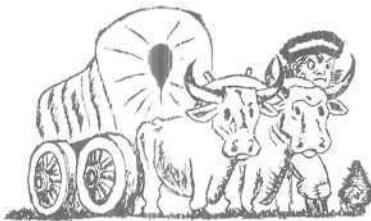
An infinite choice of objects and scenes for the photographer and artist. Numerous petrified forests, fossil beds, dinosaur graveyards for the rockhound and pebblepup. Wilderness trails for hikers and equestrians.

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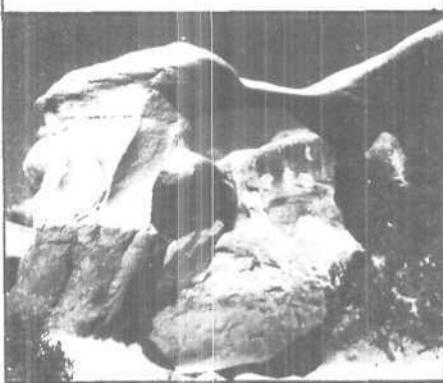
*Sunset Valley, 15 miles from Escalante.*

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### FIRE OPALS

Continued from Page 23

My first visit to the opal mine was in 1949 with a group from my college geology class. The Cowdens were excellent hosts and saw to it we all found specimens for the collections we were required to prepare as part of a final exam.

I returned within a month and spent another very pleasant weekend breaking rocks. I also found my best specimen on this trip, though there have been many others in subsequent years. Perhaps it was because I was young and enthusiastic that this came about. I cracked many chunks of basalt and found a number of small pieces before adding the half-inch "gem" to my collection.

Over the years I seem to have lost my enthusiasm for digging. Maturity has evidently made a "float collector" out of me. Oh heck, I might as well be honest—why dig when you have a strong man to do it for you? As you can see, I don't belong to "Women's Lib." However, the fine opals currently being found (January, 1972) may stimulate both Jerry and me to do some digging.

On a trip in the early 50s, I stopped at Stormy's Camp and learned Mr. Cowden was ill. Stormy was taking care of their mine, though his interest wasn't in opal. He was after uranium and had staked several claims in the hills where thin coatings of uranophane had been found on fractures in the silicified clay of the Ricardo Formation. It was, more or less, confined to one small bed in a nearby hill but did it ever make the Geiger counter jump!

Several years passed between return

visits and I never saw the Cowdens again. Then — Stormy was gone. Both of the camps fell victim to vandalism and today are only memories.

There was a bit of adventure in visiting the opal mine in the early days as the road left something to be desired—especially the short, steep climb between the two camps. The loose soil taxed both driver and stock car. Sometimes several passes were needed to make it to the top. However, like the old camps, the challenging trail has given way to a new one that is easily negotiated by cars and trailers.

During one of my visits, I decided to explore the canyon dropping sharply east. From the mine, beautiful pink hills and colorful mountains could be seen in the distance. It was a marvelous hike, not strenuous, and led through several outstanding formations. In about three-quarters of a mile, I found myself at the edge of a steep dry falls. A narrow ledge on the side of a high ridge allowed me to skirt the falls and I found myself in a forest of petrified logs. I walked midway along the steep hillside which towered several hundred feet above me and dropped downward about the same distance to the wash below. I later learned I had been on Roaring Ridge.

Beautiful veins of grey, translucent agate containing stringers of red jasper were exposed along the trail. I also dug geodes and nodules from a dark green hill about 50 feet below the trail. Catching my specimens, I hiked (slid mostly) down to the wash, climbed over two dry falls and found the entrance to the canyon could be reached by car. I later spent many happy days collecting petrified wood specimens and some excellent cutting material.

I was also lucky enough to find two fos-

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sil bones whose centers are replaced by black opal with a thin coating of white, opal-chert on the outer edge. Under short-wave light, the center of the bones fluoresce a deep orange and the outer edge green.

If you can bring yourself to leave the opal diggings, make the trip down the canyon. Try it—you'll like it. Specimens are still there for the collecting.

At the present time the opal mine is open all through the year on Saturday and Sunday only. Special dates may be arranged by appointment. Write: Leo Nowak,

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If you are interested in fluorescent minerals ask Leo to show you the ledge of opalite (opal-chert) which fluoresces green.

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## DESERT JESTER

*Continued from Page 39*

used the wheel, the biologists found the main activity peak was just before dusk, and indeed this could be a very natural time for the birds to be out for dinner in the desert. Insects would be plentiful, lizards still around and snakes would be coming out for the night. Yet the light would still be strong enough, apparently a necessity for roadrunners. Only shortly later, at twilight, the men found that the birds showed very low activity, probably because they can't see well in a dim light. Roadrunners are day birds, and both field observations and lab tests show that their visual system—their eyes and all central nerve connections—are exceedingly well adapted to bright light, just the ticket for daytime desert living.

With his ability for handling desert problems with ease and dispatch, the roadrunner has plenty of time for social life. His idea of impetuous wooing consists of prolonged coos in the tenor range, and a fine display of his raggedy scaramouch plumage, tail spread, head dipping and



bowing. The lady apparently has the same ideas of what is impetuous wooing, for she is obviously impressed, and things move apace until the moment of nest building begins.

As to be expected, neither one of these giddy birds is going to spend much time at the job. The nest is slung together with any light sticks or material at hand, usually in clumps of cactus, or up in a manzanita. The middle of the pile is tramped down into a hollow which is then lined with snake skins, cow chips, stray feathers or what have you. Egg laying time is around March or April and three to seven eggs believed to make up the batch. Incubation starts when the first egg is laid, hence the hatching is staggered, the last chick out being considerably the junior of his prior arrival nest mates.

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these the American ground cuckoo, the roadrunner, zany as he is, shines as a pearl among birds.

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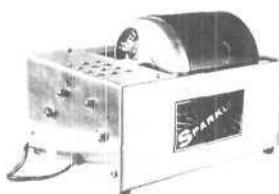


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# Rambling on Rocks

by Glenn and Martha Vargas

## VOLCANOES

### A Glimpse Into the Center of the Earth

LAST ISSUE we discussed the rocks that had been molten. Those that never reached the surface, the intrusive igneous rocks; and those that spilled out onto the surface, the extrusive igneous rocks. During the discussion, we completely ignored the most interesting feature of the extrusive rocks, volcanoes. Now we shall attempt to make up for the deletion.

These mountains of fire are of great interest because they give us a clue to what molten rock might look like beneath the surface. Actually, however, it cannot be said that lava is what magma (the molten material beneath the surface) looks like. The very act of spilling out on the surface changes the character of the material from what it was beneath the surface. As pressure is released when magma nears the surface, many gasses such as sulfur, steam and others are given off and escape into the air. If the magma had hardened beneath the surface, these escaping materials would have been retained, at least in part, and would become part of the resultant rock. Thus, we must be very careful how we interpret the information that volcanoes reveal to us. This is especially true if we try to use it to determine the charac-

teristics of the magma beneath the surface.

Volcanoes are very interesting, and some geologists make a life study of the various types and the materials that come from them. These scientists are known as volcanologists. The word volcano is from the Latin word *vulcan*, the god of fire.

The best known type of volcano is the steep conical mountain known as a cinder cone. This type is built up from repeated violent eruptions and is made of small particles (cinders) mixed with a small amount of chunks of lava that were also forcefully thrown out of the vent. Some cinder cones have a few layers of lava that helps cement the cone together. Small cinder cones seldom have any lava layers.

As a rule, lava seldom pours out over a cinder cone, but instead breaks its way out near the base through the weak unconsolidated cinders, or through a crack. Our desert Southwest contains many fine examples of cinder cones that are surrounded by lava flows. In practically all of them there is no sign of lava having flowed over the top. A fine example is to be found near the town of Amboy, California, and is known as Amboy Crater.

The eruption pattern of volcanoes is interesting in that they usually follow a somewhat set pattern. The beginnings of an eruption are quite violent. Sometimes earthquakes will precede the ejection of smoke, ash cinders and other materials. This period of violence may continue for days to many months. At some point in this phase, lava will begin to flow, and during this time the violence lessens.

Finally, the violence will practically cease and lava will flow almost continuously. This is known as the quiescent period. Usually this period terminates with a virtual cessation of activity, and this is known as dormancy. Quiescence or dormancy may then be followed by a new period of violence, with these cycles being repeated at intervals of a few weeks.

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months, years, or even centuries. It is thus very difficult to be certain that any volcano is extinct.

A fairly common type of volcano that can easily go unrecognized is known as a shield cone. This type has a very low and flat profile, much like an inverted shallow bowl. A shield cone differs from a cinder cone in that it is composed almost entirely of lava that flowed out over the top. This type of volcano has a much shorter period of violence, or none at all, and spent most of its activity sending out copious amounts of lava. These lavas are usually very hot, and quite liquid, which allows it to flow a great distance, thus creating the low profile.

Many volcanoes begin with what is known as a fissure flow. This is lava flowing freely from a crack in the earth's surface. In this case, lava is the first to show, and if a cone is built, the lava emission is followed by the violent eruption. In some cases, a fissure flow may never produce a cone. Huge lava flows may be produced, with no sign of a volcano to be found. The Bonneville Plateau, covering most of Oregon and Washington, and parts of Utah and Idaho is one of these.

Small fissure flows sometimes go through an interesting series. A cinder cone and lava flow will originate from a small crack, evidently with the usual violent period followed by quiescence and then dormancy. The dormant period is the end of the volcano, for when the lava in the small crack cools and solidifies, it seals off the vent forever. Amboy Crater is one of these.

Lavas take on many very interesting forms. The most common is the layered flow, made up of many separate emissions. These may combine into a flow many hundreds of feet in height.

In some cases, the lava flows as a stream. If it tends to harden on the surface, molten lava will flow beneath in a

sort of a "pipe." Occasionally, the volcano may abruptly stop sending lava down this stream, and the molten material in the pipe may run out, leaving a tunnel known as a lava tube. There are some excellent examples of these in northern California and southern Oregon, the best of which are in Lava Beds National Monument.

The most startling of lava types is commonly known as a Devil's Post Pile. The volcanologist calls it columnar jointed lava. It is the result of cooling and shrinkage of dark lavas. Three directions is the minimum number of directions that will relieve a strain equally. The mass breaks into cracks radiating in three directions, with these then combining into six-sided pillars. Some are five-sided, a few are four-sided, but six is the predominant number.

Investigation of lava flows will reveal different lava shapes. The most common is the wrinkled type, looking much like heavy syrup or molasses spilled during cold weather. As cool lava was forced out through a small opening it cooled rapidly and became very thick. As it was being pushed by more lava coming out of the opening, it folded into wrinkles.

If the lava came out of a vent very liquid and very hot, it tended to flow away instead of puddle. In some cases it dripped from rocks and formed long strings. In others, it twisted and rolled until it looked much like rope. This is known by two names, the first very descriptive, ropy lava; the second quite exotic and imported from Hawaii, pahoehoe lava (pronounced pa-hoy-hoy). The geologist prefers the second name.

No two volcanoes are the same, even though they may be only a short distance apart. Very few volcanoes send out the same type of lava in separate eruptions. Thus the study of volcanoes is a never-ending series of new information, some very surprising. □

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# Letters to the Editor



Letters requesting answers must include stamped self-addressed envelope.

## Rockhounding Today . . .

In terms of personal creativity, educational accomplishment and outdoor recreation, no hobby is more rewarding than rockhounding. It is relaxing to the body and stimulating to the mind. The term "rockhound" is a colloquial expression, but expressive of the wide range of educational, scientific and recreational activity associated with it.

It embraces practically every facet of the earth arts and sciences—mineralogy, geology, paleontology, archeology, petrology, gemology, lapidary, silverwork, jewelry making, and so on. It branches out into the observation and study of life forms, photographic efforts, and a general appreciation of the outdoors. It is a hobby a family enjoys together, irrespective of age or physical condition.

Open lands, where geologic formations and materials can be studied and sampled, have been the lifeblood of amateur earth scientists since widespread interest in rockhounding first appeared in the United States late in the 19th century. At that time, many gem and mineral societies were organized throughout the east, especially in New York and Pennsylvania.

As the population moved west, the hobby grew in that direction. Today, there are an estimated two million people interested in some phase of the hobby in the nation, most of whom are in the western states.

Rocks and minerals are all part of the greatest and most important geological record ever written. Some are deep in the earth, discovered during mining operations; others are found by rockhounds on the surface, and their beauty enhanced by the various arts of cutting, polishing and faceting.

In recent years the nation has expressed an interest in the exploration of the land and water areas of the earth, as well as outer space. This has stimulated a popular interest in the earth sciences. In fact, the rock hobby has become so popular that Congress is considering legislation to specifically regulate amateur rock and mineral collecting.

In 1917 the Public Land Law Review Commission recommended to the President and Congress sweeping changes involving practically every land-use law and land policy. Since then hundreds of bills have been introduced to implement these recommendations.

All outdoorsmen will be caught up in the pro-

posed changes involving management restrictions, fees, closures, zoning, commercial development, and the like. To meet the legislative challenge, Western Rockhound Association was organized in 1969 and incorporated in 1970. This fledgling organization has grown rapidly with membership now in 23 states. It has taken part in many issues, both local and national.

More and more families are joining the rockhound community. They want to visit this great outdoors, and learn something of its geological record. They will continue to need space and access to the land. The legislation being proposed today must take into consideration the right of every citizen to freely enjoy his heritage.

RUSSEL KRAMM.

2nd Vice President

Western Rockhound Association

P. O. Box 124

Artesia, Calif. 90701.

*Editor's Note: The Western Rockhound Association is a non-profit organization composed of rockhounds and outdoor enthusiasts who contribute their time and efforts without pay to serve as a "watchdog committee" to see that the rights of individuals are not abolished by potential laws which are introduced into national and state legislatures and voted on by congressmen who have either political motives or have not had an opportunity to fully comprehend the extent of the proposed legislation.*

## Pacific Crest Trail . . .

Organization of the Pacific Crest Club nationally as the Service Club of the Pacific Crest Trail is being sponsored by the Camp Research Foundation to assist the U.S. Forest Service and the National Park Service in the development and maintenance of this National Scenic Trail from Canada to Mexico.

Volunteer work parties organized from among club members will be called upon to perform light maintenance projects under the supervision of the Forest Service in 25 National Forests and seven National Parks along the 2,400 mile route which traverses the summit crests of the Cascade range in Washington and Oregon, and the Sierra Nevada and other mountains in California.

The Pacific Crest Club will be mainly concerned with wise recreational use and conservation of these last remaining wilderness areas of the Pacific west. The National Trails System Act passed by Congress formally established the Pacific Crest Trail as a National Scenic Trail and provides for its completion and limits its use to hikers and horsemen. No vehicles are permitted on the trails provided for in the Act.

Everyone interested in wilderness conservation and recreation is invited to join the Pacific Crest Club now as Founder Members. Members will receive the Pacific Crest Trail Quarterly, and may participate in trail parties of their interest in each of the three states.

Information and membership applications may be obtained by sending a self-addressed, stamped envelope to Camp Research, P.O. Box 1907, Santa Ana, Calif. 92702.

W. ROGERS,

Santa Ana, California.

## Calendar of Western Events

MARCH 1 - DECEMBER 22. The Museum of Northern Arizona and Research Center is a non-profit organization located only a few miles outside of Flagstaff, Arizona. One of the finest museums in the United States, its presentations include archeology, ethnology, geology and biology all related to the history of the West and our Indian culture. Open seven days a week, no admission charge.

MAY 6 & 7. ANNUAL FAST CAMEL CRUISE sponsored by the Sareea Al Jamel FWD Club of Indio. Two trips, one for experienced and one for novice drivers. For information and location write P.O. Box 526, Indio, Calif. 92201.

MAY 6 & 7. ANNUAL TURTLE RACES sponsored by the Joshua Tree Turtle Race Association and the Joshua Tree Gem & Mineral Society, Joshua Tree, California. 200 turtles of 35 species will be raced. IT IS AGAINST THE LAW TO OWN A DESERT TORTOISE SO DO NOT BRING ONE AS A WARDEN WILL BE PRESENT AND ISSUE CITATIONS. Other activities include gem "tailgating", booths, flower show and barbecue. For information write Joshua Tree Turtle Race Association, Joshua Tree, Calif. 92252.

MAY 13 & 14. NATURE'S TREASURES sponsored by the South Bay Lapidary and Mineral Society, Torrance Recreation Center, 3341 Torrance Blvd., Torrance, Calif. Free parking and admission. Write Dale Furman, 200 E. Maple Ave., El Segundo, Calif. 90505.

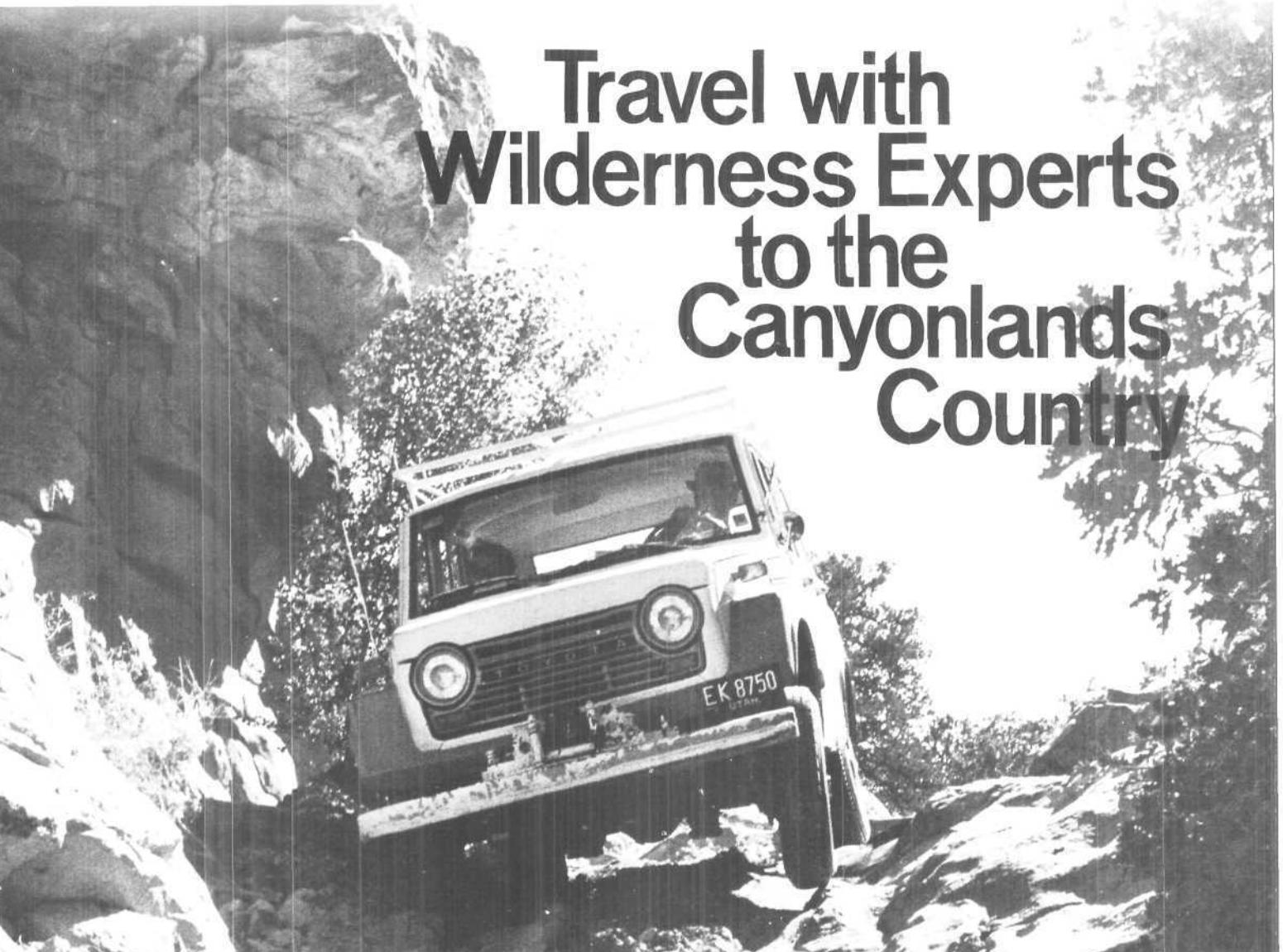
MAY 20 & 21. MAY FESTIVAL OF GEMS sponsored by the Glendale Lapidary and Gem Society, Glendale Civic Auditorium, 1401 N. Verdugo Rd., Glendale, Calif. Free admission and parking. Write Muriel Rath, 4526 Alumni Ave., Los Angeles, Calif. 90041.

MAY 20 & 21. CONVAIR ROCKHOUND CLUB annual Rock and Mineral Show, 9115 Clairemont Mesa Blvd., San Diego, Calif. Located along U.S. 395. Free parking and admission.

MAY 26-28. ANNUAL CALICO DAYS CELEBRATION, Yermo, Calif. Parade, rodeos, dances, festivities, etc. Write American Legion Post 797, P. O. Box 797, Yermo, Calif. 92398.

MAY 27. DARWIN DAYS, Western celebration. Write Mrs. H. B. Bolin, P.O. Box 100, Darwin, Calif. 93522.

JUNE 23-25. GEMS OF THE DESERT sponsored by the Mineralogical Society of Arizona and the Rocky Mountain Federation of Mineralogical Societies, Arizona State Fairgrounds, 19th & McDowell Streets, Phoenix, Arizona. More than \$1,000,000 in special gem and mineral displays. Dealers, swap tables, field trips. Write Robert Adams, 4222 E. Piccadilly Rd., Phoenix, Arizona 85018.



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